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SERIES F: NON-TELEPHONE TELECOMMUNICATION
SERVICES

Universal personal telecommunication

**Supplementary services in the Universal
Personal Telecommunication (UPT)
environment**

ITU-T Recommendation F.853

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION F.853

SUPPLEMENTARY SERVICES IN THE UNIVERSAL PERSONAL TELECOMMUNICATION (UPT) ENVIRONMENT

Summary

This Recommendation is intended to provide the service description and operational provisions for supplementary services in the Universal Personal Telecommunication (UPT) environment.

This Recommendation also provides information on interactions between UPT features/UPT supplementary services and supplementary services on a particular access (fixed or mobile).

Source

ITU-T Recommendation F.853 was prepared by ITU-T Study Group 2 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 9th of November 1998.

FOREWORD

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The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

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Recommendation F.853

SUPPLEMENTARY SERVICES IN THE UNIVERSAL PERSONAL TELECOMMUNICATION (UPT) ENVIRONMENT

(Geneva, 1998)

1 General

1.1 Scope

This Recommendation is intended to provide the service description and operational provisions for supplementary services in the Universal Personal Telecommunication (UPT) environment.

The service aspects described in this Recommendation are not dependent on any specific technical implementation. It should be noted that the availability of some service features may be dependent on the development and deployment of the supporting technology [e.g. the availability of the different Capability Sets (CS) of the Intelligent Network].

This Recommendation also provides information on interactions between UPT features/UPT supplementary services and supplementary services on a particular access (fixed or mobile). This is contained in clause 3.

1.2 General considerations

1.2.1 Service definitions

Supplementary services in the UPT environment are classified into three categories:

- a) Supplementary services specific to UPT that are only applicable within UPT. An example of this is UPT number display and restriction.
- b) ISDN supplementary services defined in the I-series Recommendations. Some ISDN supplementary services can be used in the UPT environment but this necessitates a revision to the UPT specific options which are described in this Recommendation.
- c) Supplementary services defined in the ISDN I-series Recommendations, which are inherently supported by UPT features and are therefore not considered supplementary services for UPT.

Table 1 shows an overview of supplementary services in items b) and c) which will be considered as a first step in this Recommendation. Summary service definitions for these services are presented in clause 2.

Table 1/F.853 – ISDN services and applicability to UPT

ISDN supplementary service	Existing or pending ITU Rec.	Service definition applicable to UPT with modifications	Service inherently supported by UPT
CLIP	I.251.3	X	
CLIR	I.251.4	X	
COLP	I.251.5	X	
COLR	I.251.6	X	
CNIP	I.251.9	X	
CNIR	I.251.10	X	
CFU ^{a)}	I.252.4		X
CFB	I.252.2	X	
CFNR	I.252.3	X	
CFNRc	None	X	
CW	I.253.1	X	
ECT	I.252.7	X	
3PTY	I.254.2	X	
CONF	I.254.1	X	
MMC	I.254.5	X	
HOLD	I.253.2	X	
MLPP	I.255.3	X	
a) There is no difference between the basic UPT feature InCall registration and ISDN CFU activation.			

1.2.2 Network Transport of Identities

When a UPT subscriber is originating a call from a wireline terminal, both the calling line number and the calling UPT user's number should be passed from the originating end to the terminating end of the network. Similarly, when a UPT subscriber receives an incoming call at a wireline terminal, both the identity of the terminating line number and of the called UPT user should be passed across the network(s) to the originating end. This may be necessary to support public safety requirements, e.g. emergency calls, and some supplementary services, e.g. CLIP, COLP and MCID.

In some cases, the identities will be delivered to an authorized end user, e.g. an emergency centre, and in some cases the information will not be passed beyond the network entities.

If a wireless terminal is involved, then the wireless network address of that terminal should replace the line number.

Note that the transport of line and user identities may be subject to national regulations.

1.2.3 Interactions

Considering the UPT environment and supplementary services, three different types of interactions are identified:

- a) interactions between UPT features and supplementary services outside the UPT environment (supplementary services subscribed to on a particular access);

- b) interactions between supplementary services in the UPT environment (in the UPT user's service profile) and supplementary services outside the UPT environment (subscribed to on a particular access);
- c) interactions between supplementary services and features in the UPT environment between supplementary services and features in the UPT user's service profile).

Interactions are dealt with in clause 3.

1.2.4 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revisions; all users of the Recommendations are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendation and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

- ITU-T Recommendation F.851 (1995), *Universal Personal Telecommunication (UPT) – Service Description (service set 1)*.
- CCITT Recommendation I.251.3 (1992), *Number identification supplementary services: Calling Line Identification Presentation*.
- CCITT Recommendation I.251.4 (1992), *Number identification supplementary services: Calling Line Identification Restriction*.
- ITU-T Recommendation I.251.5 (1995), *Number identification supplementary services: Connected Line Identification Presentation (COLP)*.
- ITU-T Recommendation I.251.6 (1995), *Number identification supplementary services: Connected Line Identification Restriction (COLR)*.
- ITU-T Recommendation I.251.9 (1996), *Number identification supplementary services: Calling Name Identification Presentation*.
- ITU-T Recommendation I.251.10 (1996), *Number identification supplementary services: Calling Name Identification Restriction*.
- CCITT Recommendation I.252.2 (1992), *Call offering supplementary services: Call Forwarding Busy*.
- CCITT Recommendation I.252.3 (1992), *Call offering supplementary services: Call Forwarding No Reply*.
- CCITT Recommendation I.252.4 (1992), *Call offering supplementary services: Call Forwarding Unconditional*.
- ITU-T Recommendation I.252.7 (1997), *Call offering supplementary services: Explicit Call Transfer*.
- CCITT Recommendation I.253.1 (1990), *Call completion supplementary services: Call Waiting (CW) supplementary service*.
- CCITT Recommendation I.253.2 (1992), *Call completion supplementary services: Call Hold*.
- CCITT Recommendation I.254.1 (1988), *Multiparty supplementary services: Conference calling (CONF)*.

- CCITT Recommendation I.254.2 (1992), *Multiparty supplementary services: Three-Party Supplementary Service*.
- ITU-T Recommendation I.254.5 (1997), *Multiparty supplementary services: Meet-me Conference*.
- CCITT Recommendation I.255.3 (1990), *Community of interest supplementary services: Multi-Level Precedence and Preemption service (MLPP)*.

1.3 Definitions and terminology

See Recommendation F.851.

2 Summary Service Definitions

2.1 UPT specific supplementary services

2.1.1 Call Forwarding on Terminal Not Reachable (CFNRc): The ability of the UPT user to have incoming calls forwarded to another number when the calls encounter the "not reachable" state at the mobile terminal where the UPT user is registered.

2.1.2 Selective Call Forwarding on Terminal Not Reachable (SCFNRC): The ability of the UPT user to have incoming calls from certain callers forwarded to another number when the calls encounter the "not reachable" state at the mobile terminal where the UPT user is registered. The callers may be identified with Calling Line Identities previously registered by the UPT user and/or password entered by the calling party.

2.1.3 Special Marked Call Indication (SMCI): The ability of a calling party to make a call to a UPT user indicating that the call has a special mark that can be varied and reflects diverse aspects ("alarm", "business call", etc.). The call recipient may specify using the advanced InCall feature, that all special marked calls are to be treated differently depending on the mark (for example, a business call could not be directed to the UPT user's home phone, and alarm calls shall be directed to the UPT user's special phone list).

2.1.4 distinctive alerting: The ability at a terminal/line to have a distinctive alerting pattern at the terminal receiving a UPT call to indicate to the users that this call is not a typical call, e.g. a UPT call.

2.2 UPT modification of ISDN service Recommendations

2.2.1 Call Forwarding Busy (CFB): The ability of the UPT user to have incoming calls forwarded to another number when the calls meet a busy condition at the termination where the UPT user is registered.

2.2.2 Selective Call Forwarding Busy (SCFB): The ability of the UPT user to have incoming calls from certain callers forwarded to another number when the calls meet a busy condition at the termination where the UPT user is registered. The callers may be identified with Calling Line Identities previously registered by the UPT user and/or password entered by the calling party.

2.2.3 Call Forwarding No Reply (CFNR): The ability of the UPT user to have calls forwarded to another termination when the calls have not been answered at the termination where the UPT user is registered within a time-out T (e.g. 20 seconds).

2.2.4 Selective Call Forwarding No Reply (SCFNR): The ability of the UPT user to have calls from certain callers forwarded to another termination when the calls have not been answered at the termination where the UPT user is registered within a time-out T (e.g. 20 seconds). The callers may

be identified with Calling Line Identities previously registered by the UPT user and/or password entered by the calling party.

2.2.5 Call Deflection (CD): The ability of the UPT user to have incoming UPT calls deflected in real time to another number.

2.2.6 Incoming Call Screening (ICS): The ability of the UPT user to restrict incoming calls. The screening criteria are recorded in a screening list in the UPT service profile, and may be: password, area of origin, calling line identities etc. Calls that cannot be connected due to the screening criteria are either disconnected or connected to another number or a mailbox.

Incoming Call Barring (ICB) is included in ICS.

2.2.7 Outgoing Call Screening (OCS): The ability of the UPT user to restrict the OutCall feature. The restriction criteria are recorded in a screening list in the UPT service profile and may be: certain prefixes, destination areas, date/time, etc. Calls that cannot be allowed due to the screening criteria are normally rejected with a notification to the caller, e.g. a message.

Outgoing Call Barring (OCB) is included in OCS.

2.3 Definitions of supplementary services adopted from the I-series Recommendations

2.3.1 Calling Line Identification Presentation (CLIP): Calling Line Identification Presentation (CLIP) is a supplementary service offered to the called party, which provides the calling party's number to the called party.

When the calling party is a UPT user, the calling line identity will be the UPT number.

Calling Number Presentation (CNP) is included in CLIP.

2.3.2 Calling Line Identification Restriction (CLIR): Calling Line Identification Restriction (CLIR) is a supplementary service offered to the calling party to restrict presentation of the calling party's number to the called party. When the calling party is a UPT user, both the number of the terminal and the UPT number will be restricted.

Calling Number Restriction (CNR) is included in CLIR.

2.3.3 Connected Line Identification Presentation (COLP): Connected Line Identification Presentation (COLP) is a supplementary service offered to the calling party, which provides the connected party's line number. When the called party is a UPT user, the connected number shall be the UPT number and not the actual connected line/mobile terminal identification.

Connected User Identity Presentation (CUIP) is included in COLP.

2.3.4 Connected Line Identification Restriction (COLR): Connected Line Identification Restriction (COLR) is a supplementary service offered to the called party to restrict the presentation of the connected line identification to the calling party. When the called party is a UPT user, both the UPT number and the actual connected line/mobile terminal identification is restricted.

Connected User Identity Restriction (CUIR) is included in COLR.

2.3.5 Calling Name Identification Presentation (CNIP): Calling Name Identification Presentation (CNIP) is a supplementary service offered to the called party, which provides name information associated with the calling party to the called party.

2.3.6 Calling Name Identification Restriction (CNIR): Calling Name Identification Restriction (CNIR) is a supplementary service offered to the calling party to restrict the presentation of the name information associated with the calling party to the called party.

2.3.7 Call Waiting (CW): Call Waiting (CW) is a supplementary service which permits a UPT user who is busy with an active call to be notified with an indication that another call for the UPT user is waiting. The user then has the choice of accepting, rejecting or ignoring the waiting call.

2.3.8 Explicit Call Transfer (ECT): Explicit Call Transfer (ECT) is a supplementary service which enables a UPT user who has two calls, each of which can be incoming or outgoing calls, to connect the other parties in the two calls.

2.3.9 Three-Party Service (3PTY): Three-Party Service (3PTY) is a supplementary service which enables a UPT user to establish a three-way conversation, i.e. a simultaneous communication between the UPT user and two other parties.

2.3.10 Conference Calling (CONF): Conference Calling (CONF) is a supplementary service which allows a UPT user to communicate simultaneously with multiple parties, which may also communicate among themselves. The UPT user arranges the conference and calls each participant in order to connect them to the conference.

2.3.11 Preset Conference Calling (PCC): Preset Conference Calling (PCC) is a supplementary service which allows a UPT user to quickly establish a conference call with a predefined list of conferees that is stored in the network. This simultaneous communication is established in parallel when a user requests a Preset Conference.

2.3.12 Meet-me Conference (MMC): Meet-me Conference (MMC) is a supplementary service which allows a UPT user to arrange for a call between more than two participants. Each participant has to call the conference number in order to be connected to the conference.

2.3.13 Call Hold (HOLD): Call Hold (HOLD) is a supplementary service which allows a UPT user to interrupt communications on an existing call for the purpose of making an outgoing call or of answering an incoming call, and then subsequently, if desired, of resuming the original communication.

2.3.14 Multi-Level Precedence and Pre-emption (MLPP): Multi-Level Precedence and Pre-emption (MLPP) is a supplementary service that provides prioritized call handling service. This service has two parts precedence and pre-emption. Precedence involves assigning a priority level to a call. Pre-emption involves the seizing of resources, which are in use by a call of a lower precedence, by a higher level precedence call in the absence of idle resources. Users in networks that do not support this service will not be affected by this service. Users that do not subscribe to this service will not be affected by this service.

2.3.15 Malicious Call Identification (MCID): Malicious Call Identification (MCID) is a supplementary service offered to the called party (being a UPT user) which enables the UPT user to request that the calling party be identified to the network and be registered in the network.

2.3.16 Completion of Calls to Busy Subscriber (CCBS): Completion of Calls to Busy Subscriber (CCBS) is a supplementary service which enables a calling UPT user, upon encountering a busy destination, to be notified when the busy destination becomes free and to reinitiate the call.

2.3.17 Completion of Calls on No Reply (CCNR): Completion of Calls on No Reply (CCNR) is a supplementary service which enables the calling UPT user, encountering a destination which does not answer the call (no reply), to be notified when the destination becomes free after having terminated an activity and to have the call reinitiated.

3 Description of interactions of supplementary services in the UPT environment and line owner's supplementary services

In this clause interactions are considered, taking into account the following principles:

- The UPT user shall have control of his services and calls.
- The owner of the access shall have control of his services and calls.
- The cost of the calls and services shall be charged to the correct subscription.

General assumptions about the UPT service and the originating and/or terminating networks:

- a) The UPT user's Service Provider can implement the supplementary service in its UPT service and all calls from/to the UPT user are handled under the control of the UPT service.
- b) The networks involved in the call are able to inform the UPT service about the progress of the UPT calls (e.g. conditions like Busy).

3.1 Call Waiting (CW) – Interactions between line owner's and UPT user's supplementary services

It is assumed that the UPT user has registered for either incoming calls or outgoing calls or for both.

Scenario 1 – Line owner has subscribed to Call Waiting; UPT user has not.

	Incoming call for line owner	Incoming call for UPT user
Line owner engaged in a call	Call Waiting Signal 1 will be given on the line. Calling party receives ringing tone.	Call Waiting Signal will not be given on the line. Calling party receives busy tone.
UPT user engaged in a call	Call Waiting Signal 1 will be given on the line. Calling party receives ringing tone.	Call Waiting Signal will not be given on the line. Calling party receives busy tone.

Scenario 2 – UPT user has subscribed to Call Waiting; Line owner has not.

	Incoming call for line owner	Incoming call for UPT user
Line owner engaged in a call	Call Waiting Signal will not be given on the line. Calling party receives busy tone.	Call Waiting Signal 2 will be given on the line. Calling party receives ringing tone.
UPT user engaged in a call	Call Waiting Signal will not be given on the line. Calling party receives busy tone.	Call Waiting Signal 2 will be given on the line. Calling party receives ringing tone.

Scenario 3 – Both line owner and UPT user have subscribed to Call Waiting.

	Incoming call for line owner	Incoming call for UPT user
Line owner engaged in a call	Call Waiting Signal 1 will be given on the line. Calling party receives ringing tone.	Call Waiting Signal 2 will be given on the line. Calling party receives ringing tone.
UPT user engaged in a call	Call Waiting Signal 1 will be given on the line. Calling party receives ringing tone.	Call Waiting Signal 2 will be given on the line. Calling party receives ringing tone.

3.2 Call Forwarding Busy (CFB) – Interactions between line owner's and UPT user's supplementary services

It is assumed that the UPT user has registered for either incoming calls or outgoing calls or for both.

Scenario 1 – Line owner has subscribed to CFB; UPT user has not.

	Incoming call for line owner	Incoming call for UPT user
Line owner engaged in a call	Call is forwarded	Calling party receives busy tone
UPT user engaged in a call	Call is forwarded	Calling party receives busy tone

Scenario 2 – UPT user has subscribed to CFB; Line owner has not.

	Incoming call for line owner	Incoming call for UPT user
Line owner engaged in a call	Calling party receives busy tone	Call is forwarded (by the UPT service)
UPT user engaged in a call	Calling party receives busy tone	Call is forwarded (by the UPT service)

Scenario 3 – Both line owner and UPT user have subscribed to CFB.

	Incoming call for line owner	Incoming call for UPT user
Line owner engaged in a call	Call is forwarded	Call is forwarded (by the UPT service)
UPT user engaged in a call	Call is forwarded	Call is forwarded (by the UPT service)

The same feature interactions between the line owner and the UPT user that are described here for Call Forwarding Busy (CFB) apply equally to the supplementary services of Call Forwarding Terminal Not Reachable (CFNRc), Selective Call Forwarding Terminal Not Reachable (SCFNRC), Selective Call Forwarding Busy (SCFB), Call Forwarding No Reply (CFNR), Selective Call Forwarding No Reply (SCFNR), and Call Deflection (CD); i.e. there is no effective interaction as shown in the table, and forwarding/deflection takes place based solely on the called party's features.

3.3 Calling Line Identification Presentation/Calling Line Identification Restriction (CLIP/CLIR) – Interactions between line owner's and UPT user's supplementary services

- 1) For an outgoing UPT call, only the calling UPT number may be delivered to the called party with CLIP; the calling line number should not be delivered to the called party.
- 2) The CLIR of the calling line owner ensures that the calling line number should not be delivered to the called party for outgoing non-UPT calls.
- 3) The originating UPT user's CLIR ensures that his UPT number is not delivered to the called party. The answer to 1) above is the reason that the calling line number is not delivered for an originating UPT call (not the UPT user's CLIR).

Calling party's service

Type of outgoing call	Without CLIR	With CLIR
UPT outgoing call (Line number should not be delivered)	UPT number will be delivered if called party has CLIP	UPT number will not be delivered even if called party has CLIP
Non-UPT outgoing call (UPT number should not be delivered)	Line number will be delivered if called party has CLIP	Line number will not be delivered even if called party has CLIP

Interaction between a UPT user's and a line owner's CNIP/CNIR follows the same principles as CLIP/CLIR.

3.4 Connected Line Identification Presentation/Connected Line Identification Restriction (COLP/COLR) – Interactions between line owner's and UPT user's supplementary services

- 1) The number used to complete this call to its final destination is the number that is displayed at the origination as the Connected Number, e.g.:
 - a) if a call addressed to a UPT user is simply routed through the network to wherever this UPT user is registered currently, then the originally addressed UPT number is the Connected Number;
 - b) if a call addressed to a UPT user is forwarded in the network (as specified explicitly by that user) to another UPT user, then the final UPT user's number is the connected number;
 - c) if a call addressed to a UPT user is forwarded in the network (as specified explicitly by that user) to a non-UPT line number, then the line number is the Connected Number.

Only one Connected Number is displayed.
- 2) If the connected line owner has subscribed to the COLR service, then the connected line number should not be delivered to the originator. If the connected UPT user has subscribed to the COLR service, then the connected UPT number will never be delivered to the originator.

Connected party's service

Type of connected call	Without COLR	With COLR
UPT routed call (Connected line number should not be delivered)	UPT number will be delivered if calling party has COLP	UPT number will not be delivered even if calling party has COLP
Line number routed call (Connected UPT number should not be delivered)	Line number will be delivered if calling party has COLP	Line number will not be delivered even if calling party has COLP

CLIR and COLR may both be overridden to force delivery of restricted numbers when in the public interest, e.g. by law enforcement authorities or the case of malicious calls as in MCID. Both the UPT number and the line/terminal number may be delivered in these cases.

3.5 Completion of Calls to Busy Subscriber (CCBS) – Interactions between line owner's and UPT user's supplementary services

There is no feature interaction between the line owner and the UPT user at the terminating end for CCBS. If the line/terminal is busy with either user, and if the originator invokes CCBS, then CCBS is applied equally while waiting for the line/terminal to become free. Note that this assumes that CCBS may be offered to location-independent numbers.

The same feature interaction analysis applies to **Completion of Calls on No Reply (CCNR)**.

3.6 Multi-Level Precedence and Pre-emption (MLPP) – Interactions between line owner's and UPT user's supplementary services

The precedence that is assigned to an originating call must be **that** precedence that is associated with the line owner for a line owner-initiated call, **or, that** precedence that is associated with the UPT user for a UPT user-initiated call, to ensure that pre-emption is properly applied. If either the line owner or the UPT user has not subscribed to MLPP, then their call is not subject to pre-emption.

3.7 Explicit Call Transfer (ECT) – Interactions between line owner's and UPT user's supplementary services

Incoming UPT call: Line owner's Explicit Call Transfer service should be suspended. If not, the cost of the transferred call must be charged to the UPT user.

A UPT Explicit Call Transfer (ECT) must be implemented in the UPT service node and will then operate only for UPT calls. There are no interactions between the UPT user's and the line owner's Explicit Call Transfer services.

3.8 Interaction between supplementary services in the UPT environment

Call Waiting and Call Forwarding Busy

- When both Call Waiting and Call Forwarding Busy are subscribed to and are active, Call Forwarding Busy takes precedence for relevant incoming calls.
- Application of each supplementary service to an incoming call is valid only if the called party (Line owner or UPT user) has subscribed to that particular supplementary service.

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