INTERNATIONAL TELECOMMUNICATION UNION

ITU-T E.106

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

(03/2000)

SERIES E: OVERALL NETWORK OPERATION, TELEPHONE SERVICE, SERVICE OPERATION AND HUMAN FACTORS

Operation, numbering, routing and mobile services – International operation – General provisions concerning Administrations

---

Description of an international emergency preference scheme (IEPS)

ITU-T Recommendation E.106

(Formely CCITT Recommendation)

ITU-T E-SERIES RECOMMENDATIONS

OVERALL NETWORK OPERATION, TELEPHONE SERVICE, SERVICE OPERATION AND HUMAN FACTORS

OPERATION, NUMBERING, ROUTING AND MOBILE SERVICES	
INTERNATIONAL OPERATION	
Definitions	E.100–E.103
General provisions concerning Administrations	**E.104–E.119**
General provisions concerning users	E.120–E.139
Operation of international telephone services	E.140–E.159
Numbering plan of the international telephone service	E.160–E.169
International routing plan	E.170–E.179
Tones in national signalling systems	E.180–E.199
Maritime mobile service and public land mobile service	E.200–E.229
OPERATIONAL PROVISIONS RELATING TO CHARGING AND ACCOUNTING IN THE INTERNATIONAL TELEPHONE SERVICE	
Charging in the international telephone service	E.230–E.249
Measuring and recording call durations for accounting purposes	E.260–E.269
UTILIZATION OF THE INTERNATIONAL TELEPHONE NETWORK FOR NON-TELEPHONY APPLICATIONS	
General	E.300–E.319
Phototelegraphy	E.320–E.329
ISDN PROVISIONS CONCERNING USERS	E.330–E.399
QUALITY OF SERVICE, NETWORK MANAGEMENT AND TRAFFIC ENGINEERING	
NETWORK MANAGEMENT	
International service statistics	E.400–E.409
International network management	E.410–E.419
Checking the quality of the international telephone service	E.420–E.489
TRAFFIC ENGINEERING	
Measurement and recording of traffic	E.490–E.505
Forecasting of traffic	E.506–E.509
Determination of the number of circuits in manual operation	E.510–E.519
Determination of the number of circuits in automatic and semi-automatic operation	E.520–E.539
Grade of service	E.540–E.599
Definitions	E.600–E.699
ISDN traffic engineering	E.700–E.749
Mobile network traffic engineering	E.750–E.799
QUALITY OF TELECOMMUNICATION SERVICES: CONCEPTS, MODELS, OBJECTIVES AND DEPENDABILITY PLANNING	
Terms and definitions related to the quality of telecommunication services	E.800–E.809
Models for telecommunication services	E.810–E.844
Objectives for quality of service and related concepts of telecommunication services	E.845–E.859
Use of quality of service objectives for planning of telecommunication networks	E.860–E.879
Field data collection and evaluation on the performance of equipment, networks and services	E.880–E.899

For further details, please refer to ITU-T List of Recommendations.

ITU-T RECOMMENDATION E.106

DESCRIPTION OF AN INTERNATIONAL EMERGENCY| PREFERENCE SCHEME (IEPS)

Summary

The International Emergency Preference Scheme (IEPS) is needed when there is a crisis situation which causes abnormal telecommunication requirements for governmental, military, civil authorities and other essential users of public telecommunications networks. It allows authorized users to have access to the International Telephone Service while the service is restricted due to damage, congestion and/or other faults.

Source

ITU-T Recommendation E.106 was prepared by ITU-T Study Group 2 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on 13 March 2000.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T 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 World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

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

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

INTELLECTUAL PROPERTY RIGHTS

The ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. The ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, the ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

CONTENTS

Introduction

In a crisis situation, there is a need for telecommunications among governmental, military, civil authorities and other essential users of public telecommunications networks, such as the PSTN, ISDN and PLMN. These communications, which are regarded as essential, will be needed at the same time as the public will be attempting to make more calls while the telecommunications service may be restricted due to damage, congestion and/or faults.

Most countries have national preference schemes to allow this essential internal traffic to flow. However, it is important for an international support scheme during a crisis to lay down the interoperability principles necessary to allow communications between the essential users in one country and their correspondents in another. The International Emergency Preference Scheme (IEPS) will subsequently derive from these principles as a whole.

Recommendation E.106

DESCRIPTION OF AN INTERNATIONAL EMERGENCY PREFERENCE SCHEME (IEPS)

(Geneva, 2000)

1 Scope

The International Emergency Preference Scheme (IEPS) allows authorized users to have access to the International Telephone Service as described in Recommendation E.105 [1] while the service is restricted due to damage, congestion and/or other faults. This Recommendation describes the functional requirements, features, access and the operational management of the IEPS.

2 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 revision; all users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published.

[1] ITU-T Recommendation E.105 (1992), *International telephone service*.

3 Definitions

This Recommendation defines the following term:

3.1 IEPS user: User determined by national governments to have access to IEPS.

4 Abbreviations

This Recommendation uses the following abbreviations:

IEPS International Emergency Preference Scheme

ISDN Integrated Services Digital Network

PLMN Public Land Mobile Network

PSTN Public Switched Telephone Network

5 Overall functional requirements

The primary goal of IEPS is to support crisis management arrangements. IEPS should significantly increase the ability of essential users to initiate and complete their communications (voice and data) via the PSTN, ISDN and PLMN.

Most existing national preference schemes are designed to be invoked in times of national crisis, but there could be occasions when international preference may need to be enabled although activating the respective national system would be unnecessary. An example of this is when intense international traffic is generated to a distant country in crisis. Therefore, international and national preference schemes would need to be considered as independent and yet be compatible.

Authorized users of a national preference scheme may not be eligible to gain access to the international scheme, but authorized users of the international scheme must be able to use their own national preference scheme.

It should be recognized that in some national systems, IEPS features may be permanently enabled.

IEPS users should be able to use their normal telecommunications equipment in times of crisis. When making an IEPS call, the PSTN/ISDN must not appear markedly different to any essential user.

Calls originated by IEPS users should be given priority through the networks involved when IEPS is enabled.

Under conditions of severe damage or congestion, countries should be able to effect control, particularly over incoming traffic, even though IEPS may have been invoked.

To ensure that a preference user can reliably call any other user, call- barring or similar facilities which can be set by or for any called party should be overridden. There must be no conflict between preference for a call from an essential user and call priority for a non-essential user to an emergency service.

The national authority will need to determine the preference status of calls from essential users from countries with which agreements have been made.

It is likely that call restrictions to certain specific destinations (e.g. country codes, area codes) will already be in place when IEPS is activated. Such restrictions should not apply to IEPS users. The remaining destinations should continue to be available to non-IEPS users.

Both the technical means and the management procedures for the initiation and operation of IEPS should be established and should be compatible with the existing national network traffic management schemes.

Priority calls to a number where there has been a call transfer or call forwarding will retain the priority. The marking will need to pass from one telecommunications provider to the other.

6 IEPS features

Calls from IEPS users should be suitably marked (see Note 1) at the network entrance and such markings should be associated with the call to completion (i.e. IEPS calls should be marked from end to end).

NOTE 1 – **Call Marking**: A specific identifying mark is associated with the call which prompts operational elements of the public switched network to provide advantages in signalling, switching and traffic routing over non-marked calls. Call marking facilities are available in modern signalling networks and these can be used by the telecommunications providers to maintain services to other users while allowing call completion advantages to preference user's calls.

NOTE 2 – The call marking, marking interpretation and the processing arrangements will have to be specified and fully agreed at the gateway points. Specific arrangements to transfer the marked signals would also need to be agreed with non-participating but intermediate transit countries.

The essential network features for the successful operation of IEPS are:

a) priority dial tone;

b) priority call setup, including priority queuing schemes; and

c) exemption from restrictive management controls, such as call gapping.

A list of features that will enhance call completion are mentioned in Annex A.

All IEPS calls will be of the same call class such that there will be only one level of priority for IEPS calls.

Pre-emption in the Public Network (i.e. terminating any existing call) is not to be provided.

7 Access to the IEPS

A user of any other network than the PSTN/ISDN requiring access to IEPS will need to ensure that IEPS call marking information can be carried across the network being used.

Options to access IEPS are:

- access via predetermined lines (the most practical option in nations using Access Control[1] schemes). This option reduces the possible misuse of the enhanced facility;
- access by means of special code including for example a Personal Identification Number (PIN) at any available PSTN/ISDN interface, which may be confined to the network of any particular telecommunications operator. This option provides the flexibility of access at the cost of technological and operational considerations. The allocation and control of the IEPS user PINs would require the establishment of appropriate procedures; and
- access to/from any national emergency networks.

8 Operational management of the IEPS

Requests for enabling the IEPS should be co-ordinated between the involved countries. In each country IEPS will be authorized by the national authority and it will be their responsibility to establish the necessary arrangements.

IEPS users are to be determined by national governments. Some criteria for the selection of IEPS user can be found in Appendix I.

ANNEX A

Features and techniques to enhance call completion

The features described in this annex may be used separately or in combination to create favourable conditions for the successful completion of calls, but IEPS is not necessarily dependent on them. The list is not exclusive and the use of these features is to be determined by each country, taking into account the capabilities of the networks being used.

[1] Access Control: If sufficient resources are no longer available, the ability to make telephone calls is removed from non-preference users, usually indicated by an absence of dial tone. The ability to receive calls is not affected. All calls then made by an essential user are permitted. Access control can be applied in either analogue or digital networks.

No.	Essential features for IEPS	Feature requires call marking
1	Priority dial tone – wireline or wireless connections (Essential Line Service)	No
2	Priority call setup message through signalling network with high priority call identifier (HPC identifier)	Yes
3	Exemption from restrictive (network) management controls, such as call gapping (Exemption from RNMC)	Yes

No.	Optional features (F) and techniques (T) to enhance call completion	Feature requires call marking
4	Survivable access and egress from end user location to PSTN/ISDN: (F) a) Local exchange bypass; (T) b) Diverse PSTN/ISDN access from cellular; (T) c) Prescription override; (T) d) Avoidance routing; (T) e) Diverse routing. (T)	
5	IEPS user verification (F)	Yes
6	Special announcements on call progress (F)	Yes
7	Special routing capabilities: (F) a) Enhanced alternate routing; (T) b) Trunk queuing; (T) c) Off-hook trunk waiting; (T) d) Dynamic trunk reservation; (T) e) Trunk sub-grouping; (T) f) Automatic call re-routing; (T) g) PSTN/ISDN partitioning. (T)	 Yes Yes Yes Yes Yes No No
8	Call forwarding (F)	Yes
9	Abbreviated dialling (F)	No
10	Attendant override (F)	Yes
11	Authorization codes (F)	No
12	Automatic call distribution (F)	No
13	Call-by-call service selection (F)	No
14	Call pickup (F)	No
15	Call transfer (F)	No
16	Call waiting (F)	No
17	Calling number identification (F)	No

A.1 Priority Dial Tone

A service arrangement that enhances the ability of IEPS users to receive priority over other users for the reception of dial tone. This is a restrictive treatment of non-IEPS users. Note that access denial systems are an extreme form of restrictive treatment, providing dial tone to permitted lines only. Call attempts from such designated lines are placed in a priority queue and are handled before non-IEPS calls.

A.2 Priority call setup message through national and international signalling network with call identifier

This is a method of marking and identifying IEPS calls through networks. As the IEPS call progresses through the networks, this identifier would enable special routing and preferential treatment to ensure the higher probability of call completion.

A.3 Exemption from restrictive management controls

A set of control measures used to prevent or control degradation of network service. These measures are either expansive or protective. Expansive measures increase call routing choices by providing more capability than normal to carry excess traffic. Protective measures limit calls going into a switch or trunk group.

A.4 Survivable access and egress from end user location to PSTN/ISDN

Techniques that enhance survivable access from the end user to the PSTN/ISDN are described in a) to e).

a) Local exchange bypass

The use of direct access services to or egress services from Switched Networks by using either bulk, wide-band, switched, point-to-point, or circuit-by-circuit services. These services are available from providers such as cellular service providers, specialized service providers and satellite service providers.

b) Diverse PSTN/ISDN access from cellular

This technique allows cellular networks to directly interconnect with other elements of PSTN/ISDN. This allows cellular calls to be routed around failed or congested nodes. Network access diversity allows specifically identified calls to be routed to private or special purpose networks.

c) Prescription override

The ability to select an alternative carrier, e.g. by dialling a specific code or operating a selection key on the terminal instrument.

d) Avoidance routing

This technique, with limited availability, permits a user to enhance their survivability in PSTN/ISDN by directing the service provider to assign them to transmission facilities that avoid points of vulnerability such as earthquake zones or hurricane areas.

e) Diverse routing

This technique provides the user with a second route over physically separate facilities which can be used if the primary route is unavailable.

A.5 IEPS user verification

This feature allows for the verification of the IEPS user. Personal Identification Numbers (PINs), line identification, authorization codes or call-back facilities could be used to verify the call as an authorized IEPS call.

A.6 Special announcements on call progress

This feature will provide recorded voice announcements for originated call to announce information to the user when calls cannot be completed or to provide problem and restoral information.

A.7 Special routing capabilities

Special routing capabilities that enhance call completion are described in a) to g).

a) Enhanced alternate routing

Routing programs are used to provide special routing controls and paths within a network.

b) Trunk queuing

This technique would hold the IEPS call in queue until a trunk became available, then the first call in queue (the IEPS call) would have access to the next available trunk. The IEPS call would not receive an immediate "all trunks busy" tone.

c) Off-hook trunk waiting

This technique allows the IEPS caller to remain off-hook and the network continually searches, at predetermined intervals (i.e. several seconds) for an idle trunk if no idle trunk was found on the initial attempt.

d) Dynamic trunk reservation

This technique automatically reserves reservation of trunks for certain classes of calls under designated conditions. It could be implemented or activated in the following ways:

- IEPS calls could be allocated a variable number of trunks between switches according to demand;
- the use of network management control under predetermined conditions, to reserve trunks in an idle condition for the exclusive use of IEPS calls; and
- the designation of specific sub-groups within a trunk group that, under predetermined conditions, would be reserved for IEPS calls.

e) Trunk sub-grouping

This technique splits trunks into pre-assigned sub-groups; one for general use and another for IEPS use only. Under normal conditions general use traffic could use either sub-group. During emergencies only IEPS calls would use the IEPS sub-group. Overflow from the IEPS sub-group could be routed over the general use sub-group but the general calls would not be allowed to overflow to the IEPS sub-group.

f) Automatic call re-routing

This technique allow calls to be routed over other operator's networks.

g) PSTN/ISDN partitioning

This is the use of hardware or software to separate traffic into specific functional groups for the purpose of providing special service capabilities such as enhanced call completion for IEPS calls.

A.8 Call forwarding

A feature that enables calls to be re-routed automatically from one line to another or to an attendant.

A.9 Abbreviated dialling

A feature by which a user can attempt a call by dialling a two- or three- digit code that instructs a database to obtain the actual desired number from a look-up table and transmit it into the network to connect the calling line to the called line.

A.10 Attendant override

A feature that allows the terminal equipment operator to interrupt a call that is in progress.

A.11 Authorization codes

Unique multi-digit codes used to allow an authorized user privileged access to a network, system or device. If the code is validated the call is allowed to advance.

A.12 Automatic call distribution

A system designed to evenly distribute traffic by directing incoming calls over a group of terminals.

A.13 Call-by-call service selection

A feature that provides improved trunking efficiency between end-user location and end-office by allowing a variety of services to use the same trunk group and by distributing traffic over the total number of available trunks on a call-by-call basis.

A.14 Call pickup

A feature that enables a connected extension to answer any ringing extension within an assigned call pickup group.

A.15 Call transfer

A feature whereby a call to a user's number is automatically transferred to one or more alternative numbers when the called number is busy or does not answer.

A.16 Call waiting

A feature that provides a distinctive audible tone to a busy user's line to notify the user when another caller is attempting to reach his/her number.

A.17 Calling number identification

A feature that provides the identification of the calling user's number by means of a visual or audible identification at the called terminal.

APPENDIX I

Criteria for the selection of IEPS users

IEPS users are to be determined by national governments. The criteria for selection may be as follows:

- military purposes;
- civil defence/"home defence", e.g. public warning systems;
- diplomatic and other vital governmental purposes;
- state security purposes including customs and immigration;
- emergency services by local authorities, including police, fire services, etc.;
- posts and telecommunications service providers, for maintaining their service provision to other essential users;
- public utilities including energy, water supplies, etc.;
- medical services;
- air and sea rescue.

ITU-T RECOMMENDATIONS SERIES

Series A	Organization of the work of the ITU-T
Series B	Means of expression: definitions, symbols, classification
Series C	General telecommunication statistics
Series D	General tariff principles
Series E	**Overall network operation, telephone service, service operation and human factors**
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks and open system communications
Series Y	Global information infrastructure
Series Z	Languages and general software aspects for telecommunication systems

18180

Printed in Switzerland
Geneva, 2000