

I n t e r n a t i o n a l T e l e c o m m u n i c a t i o n U n i o n

ITU-T

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STANDARDIZATION SECTOR
OF ITU

Q.1902.4

Amendment 3

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SERIES Q: SWITCHING AND SIGNALLING

Specifications of signalling related to Bearer Independent
Call Control (BICC)

Bearer Independent Call Control protocol
(Capability Set 2): Basic call procedures

**Amendment 3: Support for the International
Emergency Preference Scheme**

ITU-T Recommendation Q.1902.4 (2001) –
Amendment 3



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ITU-T Recommendation Q.1902.4

Bearer Independent Call Control protocol (Capability Set 2): Basic call procedures

Amendment 3

Support for the International Emergency Preference Scheme

Summary

This amendment was produced to meet the need for the implementation of the International Emergency Preference Scheme (IEPS) for disaster recovery operations as specified in ITU-T Rec. E.106. It contains the modifications to ITU-T Rec. Q.1902.4 (2001) in order to accommodate these needs. This amendment should be read in conjunction with Amendment 2 to ITU-T Rec. Q.1902.1, Amendment 3 to ITU-T Rec. Q.1902.2, and Amendment 3 to ITU-T Rec. Q.1902.3. This amendment incorporates Amendment 1 to ITU-T Rec. Q.1902.4 and provides enhancements.

Source

Amendment 3 to ITU-T Recommendation Q.1902.4 (2001) was approved on 27 January 2006 by ITU-T Study Group 11 (2005-2008) under the WTSA Resolution 1 procedure.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. 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 Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 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.

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

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As of the date of approval of this Recommendation, 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.

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ITU-T Recommendation Q.1902.4

Bearer Independent Call Control protocol (Capability Set 2): Basic call procedures

Amendment 3

Support for the International Emergency Preference Scheme

1) Clause 4 – Abbreviations

Add the following new abbreviations alphabetically:

CPC Calling Party's Category

IEPS International Emergency Preference Scheme

2) Clause 7.2.2.3 – Actions required at an intermediate international SN

Add the following:

b) International Emergency Preference Scheme:

- i) If the CSF, at an intermediate international SN, receives a call with CPC set to IEPS, the call establishment proceeds with priority. The call is established with the CPC set as IEPS call marking in the outgoing IAM. Restrictive network management controls (e.g., Automatic Call Gapping, Automatic Congestion Control, Hard-to-Reach procedure) are not applied to this call.
- ii) For an IEPS-call, the codec negotiation procedures are not to be invoked. If codec negotiation is already invoked on a preceding bearer path, the SN shall terminate the codec negotiation procedures and the call shall proceed.
- iii) If routing procedures fail to find an outgoing CIC value, the call is queued and shall take precedence over any other normal call attempts.
- iv) Optionally, if queuing occurs, an early ACM (called party status set to "no indication") with the inclusion of the generic notification parameter set to "call completion delay" may be returned to the preceding CSF. However, if the incoming IAM had indicated "COT to be expected", the early ACM (no indication) shall not be sent until Continuity Message (COT) with Continuity Indication has been received.

3) Clause 7.2.3.3 – Actions required at an intermediate international CMN

Add the following:

b) International Emergency Preference Scheme:

- i) If the CSF, at an intermediate international CMN, receives a call with CPC set to IEPS, the call establishment proceeds with priority. The call is established with the CPC set as IEPS call marking in the outgoing IAM. Restrictive network management controls (e.g., Automatic Call Gapping, Automatic Congestion Control, Hard-to-Reach procedure) are not applied to this call.
- ii) If routing procedures fail to find an outgoing CIC value, the call is queued and shall take precedence over any other normal call attempts.

- iii) Optionally, if queuing occurs, an early ACM (called party status set to "*no indication*") with the inclusion of the generic notification parameter set to "*call completion delay*" may be returned to the preceding CSF. However, if the incoming IAM had indicated "*COT to be expected*", the early ACM (no indication) shall not be sent until Continuity Message (COT) with Continuity Indication has been received.

4) Clause 7.2.4.3 – Actions required at an outgoing international gateway SN

Add the following:

- c) International Emergency Preference Scheme:
 - i) If the CSF, at an outgoing international gateway SN, receives information from the national network that the call is to be treated as an IEPS call (e.g., CPC value of IEPS), call establishment proceeds with priority. The call is established with the CPC set as IEPS call marking in the outgoing IAM. Restrictive network management controls (e.g., Automatic Call Gapping, Automatic Congestion Control, Hard-to-Reach procedure) are not applied to this call.
 - ii) For an IEPS-call, the codec negotiation procedures are not to be invoked. If codec negotiation is already invoked on a preceding bearer path, the SN shall terminate the codec negotiation procedures and the call shall proceed.
 - iii) If routing procedures fail to find an outgoing CIC value, the call is queued and shall take precedence over any other normal call attempts.
 - iv) Optionally, if queuing occurs, an early ACM (called party status set to "*no indication*") with the inclusion of the generic notification parameter set to "*call completion delay*" may be returned to the preceding CSF. However, if the incoming IAM had indicated "*COT to be expected*", the early ACM (no indication) shall not be sent until Continuity Message (COT) with Continuity Indication has been received.

5) Clause 7.2.5.3 – Actions required at an outgoing international gateway CMN

Add the following:

- b) International Emergency Preference Scheme:
 - i) If the CSF, at an outgoing international gateway CMN, receives information from the national network that the call is to be treated as an IEPS call (e.g., CPC value of IEPS), call establishment proceeds with priority. The call is established with the CPC set as IEPS call marking in the outgoing IAM. Restrictive network management controls (e.g., Automatic Call Gapping, Automatic Congestion Control, Hard-to-Reach procedure) are not applied to this call.
 - ii) If routing procedures fail to find an outgoing CIC value, the call is queued and shall take precedence over any other normal call attempts.
 - iii) Optionally, if queuing occurs, an early ACM (called party status set to "*no indication*") with the inclusion of the generic notification parameter set to "*call completion delay*" may be returned to the preceding CSF. However, if the incoming IAM had indicated "*COT to be expected*", the early ACM (no indication) shall not be sent until Continuity Message (COT) with Continuity Indication has been received.

6) Clause 7.2.6.3 – Actions required at an incoming international gateway SN

Add the following (after the Note):

- a) International Emergency Preference Scheme:
 - i) If the CSF, at an incoming international gateway SN, receives a call with CPC set to IEPS, the call establishment proceeds with priority. The call is established with the CPC set as IEPS call marking or national specific information for IEPS call treatment in the outgoing IAM. Restrictive network management controls (e.g., Automatic Call Gapping, Automatic Congestion Control, Hard-to-Reach procedure) are not applied to this call.
 - ii) For an IEPS-call, the codec negotiation procedures are not to be invoked. If codec negotiation is already invoked on a preceding bearer path, the SN shall terminate the codec negotiation procedures and the call shall proceed.
 - iii) If routing procedures fail to find an outgoing CIC value, the call is queued and shall take precedence over any other normal call attempts.
 - iv) Optionally, if queuing occurs, an early ACM (called party status set to "no indication") with the inclusion of the generic notification parameter set to "call completion delay" may be returned to the preceding CSF. However, if the incoming IAM had indicated "COT to be expected", the early ACM (no indication) shall not be sent until Continuity Message (COT) with Continuity Indication has been received.

7) Clause 7.2.7.3 – Actions required at an incoming international gateway CMN

Add the following (after the Note):

- a) International Emergency Preference Scheme:
 - i) If the CSF, at an incoming international gateway CMN, receives a call with CPC set to IEPS, the call establishment proceeds with priority. The call is established with the CPC set as IEPS call marking or national specific information for IEPS call treatment in the outgoing IAM. Restrictive network management controls (e.g., Automatic Call Gapping, Automatic Congestion Control, Hard-to-Reach procedure) are not applied to this call.
 - ii) If routing procedures fail to find a outgoing CIC value, the call is queued and shall take precedence over any other normal call attempts.
 - iii) Optionally, if queuing occurs, an early ACM (called party status set to "no indication") with the inclusion of the generic notification parameter set to "call completion delay" may be returned to the preceding CSF. However, if the incoming IAM had indicated "COT to be expected", the early ACM (no indication) shall not be sent until Continuity Message (COT) with Continuity Indication has been received.

8) Clause 7.4 – Outgoing bearer set-up procedure

Add the following new paragraph and note at the end:

The BCF shall select appropriate bearer resources for a call with CPC set to IEPS to ensure that the quality of the bearer path is guaranteed throughout the lifetime of the call. This applies both to the set-up phase of the call as well as to the connection phase of the call in case of congested network situations. The CSF shall accordingly pass the IEPS indicator to the BCF in the BNC Information Request primitive and/or in the Bearer Set-up Request primitive.

NOTE – The emergency call indicator in Annex F/Q.1950 should no longer be used for IEPS.

9) **Clause 7.5 – Incoming bearer set-up procedure**

Add the following new paragraph and note at the end:

The BCF shall select appropriate bearer resources for a call with CPC set to IEPS to ensure that the quality of the bearer path is guaranteed throughout the lifetime of the call. This applies both to the set-up phase of the call as well as to the connection phase of the call in case of congested network situations. The CSF shall accordingly pass the IEPS indicator to the BCF in the BNC Information Request primitive and/or in the Bearer Set-up Request primitive.

NOTE – The emergency call indicator in Annex F/Q.1950 should no longer be used for IEPS.

10) **New clause 7.4.6 Polling at an international SN for IEPS calls**

Add new clause 7.4.6 as follows:

7.4.6 Polling at an international SN for IEPS calls

For IEPS calls at an international SN, for the above cases 7.4.1 to 7.4.5 where the BCF has indicated a failure due to temporary resource unavailability to the Bearer Set-up Request, or there has been no reply to the Bearer Set-up Request, the following optional polling procedure is initiated in the CSF:

- 1) An ACM (no indication) with the inclusion of the generic notification parameter set to "*call completion delay*" is returned to the incoming side. If the IAM indicated "*COT to be expected*" then the sending of the ACM (no indication) is delayed until the COT has been received. A polling guard timer (T44) is started to prevent the CSF to be polling an IEPS call for an excessive time.
- 2) The CSF may immediately send a Bearer Set-up Request to a different BCF for the purpose of selecting a different BIWF. If the BCF indicates a failure due to temporary resource unavailability to the Bearer Set-up Request, or there has been no reply to the Bearer Set-up Request, this step may be repeated towards other BCFs.
- 3) If Bearer Set-up Failure due to temporary resource unavailability is indicated, or there is no reply to the Bearer Set-up Request, by all BCFs in step 2 the CSF shall start a polling timer (T45).
- 4) On expiry of T45, the CSF shall send a Bearer Set-up Request to the first BCF. If Bearer Set-up Failure due to temporary resource unavailability is indicated, or there is no reply to the Bearer Set-up Request, steps 2 and 3 are repeated until a BCF indicates that resources are available. The time between successive polling attempts (T45) should be increased for each execution of step 3.

If the CSF receives a reply to the initial Bearer Set-up Request indicating "*Transaction Pending*", step 1 is executed and no further action is taken until the BCF responds further. If a BCF responds to any Bearer Set-up Request in step 2 or 4 with "*Transaction Pending*", no further action is taken until the BCF responds further.

If T44 expires at any time during the above procedures, the CSF initiates normal call termination procedures.

11) **New clause 7.5.6 Polling at an international SN for IEPS calls**

Add new clause 7.5.6 as follows:

7.5.6 Polling at an international SN for IEPS calls

For IEPS calls at an international SN, for the above cases 7.5.1 to 7.5.5 where the BCF has indicated a failure due to temporary resource unavailability to the Bearer Set-up Request, or there

has been no reply to the Bearer Set-up Request, the following optional polling procedure is initiated in the CSF:

- 1) An ACM (no indication) with the inclusion of the generic notification parameter set to "*call completion delay*" is returned to the incoming side. If the IAM indicated "*COT to be expected*" then the sending of the ACM (no indication) is delayed until the COT has been received. A polling guard timer (T44) is started to prevent the CSF to be polling an IEPS call for an excessive time.
- 2) The CSF may immediately send a Bearer Set-up Request to a different BCF for the purpose of selecting a different BIWF. If the BCF indicates a failure due to temporary resource unavailability to the Bearer Set-up Request, or there has been no reply to the Bearer Set-up Request, this step may be repeated towards other BCFs.
- 3) If Bearer Set-up Failure due to temporary resource unavailability is indicated, or there is no reply to the Bearer Set-up Request, by all BCFs in step 2, the CSF shall start a polling timer (T45).
- 4) On expiry of T45, the CSF shall send a Bearer Set-up Request to the first BCF. If Bearer Set-up Failure due to temporary resource unavailability is indicated, or there is no reply to the Bearer Set-up request, steps 2 and 3 are repeated until a BCF indicates that resources are available. The time between successive polling attempts (T45) should be increased for each execution of step 3.

If the CSF receives a reply to the initial Bearer Set-up Request indicating "*Transaction Pending*", step 1 is executed and no further action is taken until the BCF responds further. If a BCF responds to any Bearer Set-up Request in step 2 or 4 with "*Transaction Pending*", no further action is taken until the BCF responds further.

If T44 expires at any time during the above procedures, the CSF initiates normal call termination procedures.

12) New clause 8.23 IEPS call information

Add new clause 8.23 as follows:

8.23 IEPS call information

8.23.1 Actions required at an outgoing international gateway SN or CMN

Where the CSF logic at the node determines that an IEPS call (as set out in 7.2.4.3 c and 7.2.5.3 b) requires IEPS information to be transported in the forward direction and based on bilateral agreement between administrations, the IEPS call information parameter shall be sent in the IAM. This parameter will contain the identity of the entity (the country or international network) originating the IEPS call, and the national priority level of the call. The priority level in the IEPS call information parameter will be the national priority level of the call in the entity originating the call. The priority level in the IEPS call information parameter is signalled in inverse order of the numerical value, i.e., the lower the numerical value is, the higher the priority. For example, numerical value 0 indicates the highest priority possible.

8.23.2 Actions required at an intermediate international SN or CMN

If an intermediate international SN or CMN receives a call with CPC set to IEPS, the call establishment proceeds with priority. The call is established with the CPC set as IEPS in the outgoing IAM. The IEPS call information parameter shall be passed on transparently. The SN or CMN shall not provide IEPS priority treatment if the CPC value is not IEPS, even if the optional IEPS call information parameter is present.

8.23.3 Actions required at an incoming international gateway SN or CMN

If an incoming international gateway SN or CMN receives a call with CPC set to IEPS, the call establishment proceeds with priority. On receipt of the IEPS call information parameter, the incoming international gateway SN or CMN may provide enhanced service features by analysing the contents of this parameter. The SN or CMN may provide a mapping of the IEPS priority level received from the entity (the country or international network) originating the IEPS call to that of the entity (the country or international network) of call destination. In case mapping is not implemented, the IEPS information parameter may be discarded, however, the call shall continue to be treated as a priority call. The call is established with the CPC set as IEPS or national specific information for IEPS call treatment in the outgoing IAM.

If the IEPS call information parameter is expected (due to bilateral agreements) but is not received for an IEPS call (i.e., CPC is set to IEPS), the call establishment proceeds with priority. If the IEPS call information parameter is received containing a value (country/international network code and/or priority level), which has not been bilaterally agreed for an IEPS call (i.e., CPC is set to IEPS), the call establishment proceeds with priority. The call is established with the CPC set as IEPS or national specific information for IEPS call treatment in the outgoing IAM. A default priority value will be used for the call in the entity of call destination. The SN or CMN shall not provide IEPS priority treatment if the CPC value is not IEPS, even if the optional IEPS call information parameter is present.

13) Annex A – Timers

Add the following timers to Table A.1:

Table A.1/Q.1902.4 – Timers in the BICC basic call protocol

Symbol	Time-out value	Cause for initiation	Normal termination	At expiry	Reference
T44	1-180 seconds	When the CSF receives failure due to temporary resource unavailability, or no reply, to the initial Bearer Set-up Request	Successful seizure of bearer	Initiate release procedures	7.4.6 7.5.6
T45	1-32 seconds, progressively increasing for each polling re-attempt (e.g., 2, 4, 6, 10, 16, 32)	When the CSF receives failure due to temporary resource unavailability, or no reply, to all Bearer Set-up Requests	–	Start polling by sending Bearer Set-up Request to first BCF	7.4.6 7.5.6

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