INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

V.18
Appendix III
(09/98)

SERIES V: DATA COMMUNICATION OVER THE TELEPHONE NETWORK
Interfaces and voiceband modems

Operational and interworking requirements for DCEs operating in the text telephone mode
Appendix III: Connection procedures for terminals including V.18 functionality

ITU-T Recommendation V.18 – Appendix III

(Previously CCITT Recommendation)

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DATA COMMUNICATION OVER THE TELEPHONE NETWORK

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ITU-T RECOMMENDATION V.18

OPERATIONAL AND INTEWORKING REQUIREMENTS FOR DCEs OPERATING IN THE TEXT TELEPHONE MODE

APPENDIX III

Connection procedures for terminals including V.18 functionality

Summary

This Appendix contains informative material on how to apply V.18, V.8 and V.8 *bis* procedures successfully in different situations and environments.

Source

Appendix III to ITU-T Recommendation V.18 was prepared by ITU-T Study Group 16 (1997-2000) and was approved on the 25th of September 1998.

FOREWORD

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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 term *recognized operating agency (ROA)* includes any individual, company, corporation or governmental organization that operates a public correspondence service. The terms *Administration*, *ROA* and *public correspondence* are defined in the *Constitution of the ITU (Geneva, 1992)*.

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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.

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Connection procedures for terminals including V.18 functionality

(Geneva, 1998)

III.0 Connection considerations

The following procedures are advised for reliable connection establishment where a V.18 device is connected to the same line as other terminal equipment.

In text telephone operation, it is not uncommon to do transition from voice mode to text mode during a call. Selection of originate or answer mode is not an obvious task for a user in voice mode. Therefore the following procedures are provided for guidance.

Three different procedures are documented:

- the V.8 procedures, which make use of the V.8 messages CI, ANSam, CM, JM to select the common mode of operation;
- the TXP procedures, which make use of the CI, ANS and TXP signals, identified in Recommendation V.18;
- the V.8 *bis* procedures, which make use of CR, CLR, CL, MS and other V.8 *bis* signals.

III.1 V.8 compliant connection procedures

V.18 DCEs can make use of the full V.8 procedures, still maintaining compatibility with the original TXP based procedure.

III.1.1 Originate mode

In originate mode, CI and XCI should be transmitted and detection of ANSam, ANS and text telephone signals should be enabled.

If ANSam is received, a CM signal should be transmitted according to the V.8 procedures and the connection procedure according to Recommendation V.8 should be completed. If the text telephone function selection is completed, the selected modulation should be started and V.18 text telephone presentation protocol T.140 invoked.

If ANS is received, the original TXP signal exchange is followed.

If other text telephone signals are detected, the V.18 procedures should be followed to enter a suitable mode.

III.1.2 Answer mode

In answer mode, detection of a CI with any call function or a XCI should cause ANSam to be sent.

In all other cases when the original procedure specifies transmission of ANS, ANSam should be transmitted.

If CM is received, the V.8 procedures should be followed to select a common call function and mode. If the selected call function is "textphone", the selected modulation should be started and V.18 text telephone presentation protocol T.140 invoked.

If TXP is received, the original TXP signal exchange is continued that normally ends in V.18 mode, V.21 modulation and T.140 presentation protocol.

If another text telephone signal is detected, the V.18 procedures should be followed to enter a suitable mode.

If no signal is detected within 3 seconds, the V.18 probing procedures should be initiated, still monitoring for V.8 signals in addition to what is specified for Recommendation V.18.

III.1.3 Enter data mode from voice

If the DCE is activated during a call without evident association to calling or answering, a 7-second timer should be started and the V.18 originating procedures described in III.1.1 above should be initiated. If no text telephone signal and no V.8 signal is detected during this time, the V.18 modem should revert to answer mode as described in III.1.2.

NOTE – This subclause is intended to address the transfer from voice mode to text mode. The procedure implies a small risk of connecting in one of the compatibility modes between two V.18 capable devices.

III.1.4 Monitoring state

In the automoding monitor state, when V.8 procedures are invoked, the DCE shall be configured to detect ANSam and any CI in addition to what is specified in 5.3/V.18. It is advisable to let the DCE be in automoding monitor mode as soon as any other device is active on the line and it can be expected that the other party in the call want to start text telephone operation.

III.2 V.18 connection procedures when neither Recommendation V.8 nor Recommendations V.8 *bis* is supported (TXP procedures)

If Recommendation V.18 is implemented in the DCE, but not Recommendation V.8 and not Recommendation V.8 *bis*, the following procedures should be followed.

III.2.1 As soon as the line is seized by any device on the line, the DCE should be placed in automoding monitor state. Care should be taken not to respond to any DTMF dialled digits from other terminals on the line.

III.2.2 If the DCE is activated in the calling mode, i.e. performs the dialling, then the V.18 originating procedures should be invoked.

III.2.3 If the DCE is ordered to go off-hook within 10 seconds after an incoming ring is detected, the DCE should be configured to detect network signals. If ringing tone is detected, then the V.18 originating procedure should be invoked. (This situation appears, for example, in a call when the supplementary service "Completion of call to busy subscriber" is invoked.) If no ringing tone is detected, the V.18 answering procedures should be activated.

III.2.4 If the DCE is activated during a call without evident association to calling or answering, according to the two subclauses above, a 7-second timer should be started and the V.18 originating procedures should be initiated. If no text telephone signal is detected during this time, the V.18 modem should revert to answer mode.

NOTE – This subclause is intended to address the transfer from voice mode to text mode. The procedure implies a small risk of connecting in one of the compatibility modes between two V.18 capable devices.

III.3 V.8 *bis* connection procedures

Recommendation V.8 *bis* offers possibilities to indicate more than one mode to use during the call. It also offers mechanisms for negotiating details about the selected mode. Only by completing a V.8 *bis* start-up sequence can the H.324 multimedia terminals invoke the multilink protocol, the component selection, the encryption and the text conversation protocol T.140. Recommendation V.18 has one mode for voice and text selectable only through Recommendation V.8 *bis*.

It is also possible to declare two or more available modes and agree on one. One example is that both V.18 and H.324 with T.140 can be declared, and any common mode for text conversation can be selected.

Recommendation V.8 *bis* can be applied in a number of ways. It is important to follow the procedures documented below, in order to complete the startup between two V.8 *bis* devices in V.8 *bis* mode and then be able to select any higher functionality offered.

If Recommendation V.8 *bis* is implemented in the DCE, the following procedures should be followed.

In the V.8 *bis* procedure, a text telephone device should indicate "V.18 Text Telephone" in the V.8 *bis* parameters, and appropriate supported modulations. If other modes of interest for the current call are supported (e.g. H.324 with T.140), they should also be indicated, and the V.8 *bis* procedure used to select a common mode.

V.8 *bis* transactions 2 and 3 are preferred for use during a call and transactions 12 and 13 are preferred at the beginning of a call. When a V.8 *bis* sequence is completed, the procedures recommended in 9.9/V.8 *bis* for assigning answer mode and originate mode when entering communication mode should be applied.

III.3.1 As soon as the line is seized by any DTE on the connection, the DTE should set the V.18 modem to the automoding monitor state. The modem should also be configured to detect V.8 *bis* signals.

III.3.2 If the DCE is activated in the calling mode, i.e. performs the dialling, then the V.18 originating procedures should be invoked with the following additions:

– The DTMF tones used in dialling should not cause detection as valid text telephone signals in the calling DCE.

– Configure the DCE to detect V.8 *bis* signals and text telephone signals.

If V.8 *bis* signals are detected, the DCE should perform the V.8 *bis* procedures to enter a common mode.

If text telephone signals are detected, the DCE should perform the V.18 procedures to enter a common mode for text conversation.

III.3.3 If the DCE is activated within 10 seconds after a ring is detected, the DCE should *be configured to detect* the line for network tones. If a ringing tone is detected, then the procedure in III.3.2 should be applied. This situation appears for example in the call from when the supplementary service: "Completion of call to busy subscriber" is invoked. If a ringing tone is not detected, then the V.18 answering procedures should be invoked applied as follows:

– Send V.8 *bis* signal Capability Request (CRe).

– *Be configured to detect* for V.8 *bis* signals and text telephone signals.

– At detection of a CI signal or an XCI signal, start a 3-second timer, and then send CRe. If no V.8 *bis* response is detected during the 3-second timeout, or another CI or XCI is received, then continue according to the V.8 or the TXP procedure. If a V.8 *bis* response is received, the V.8 *bis* procedure should be continued to select a common mode of operation.

III.3.4 If the DCE is activated during a call without evident association to calling or answering, according to III.3.1, III.3.2 and III.3.3, a V.8 *bis* CRd signal should be sent, a time-out of 7 seconds should be set and the procedures according to III.3.2 should be applied. If no V.8 *bis* or text telephone signals are detected during this time, the procedures according to III.3.3 should be applied.

III.3.5 Connection examples

Figure III.1 shows examples of a couple of typical situations that can occur.

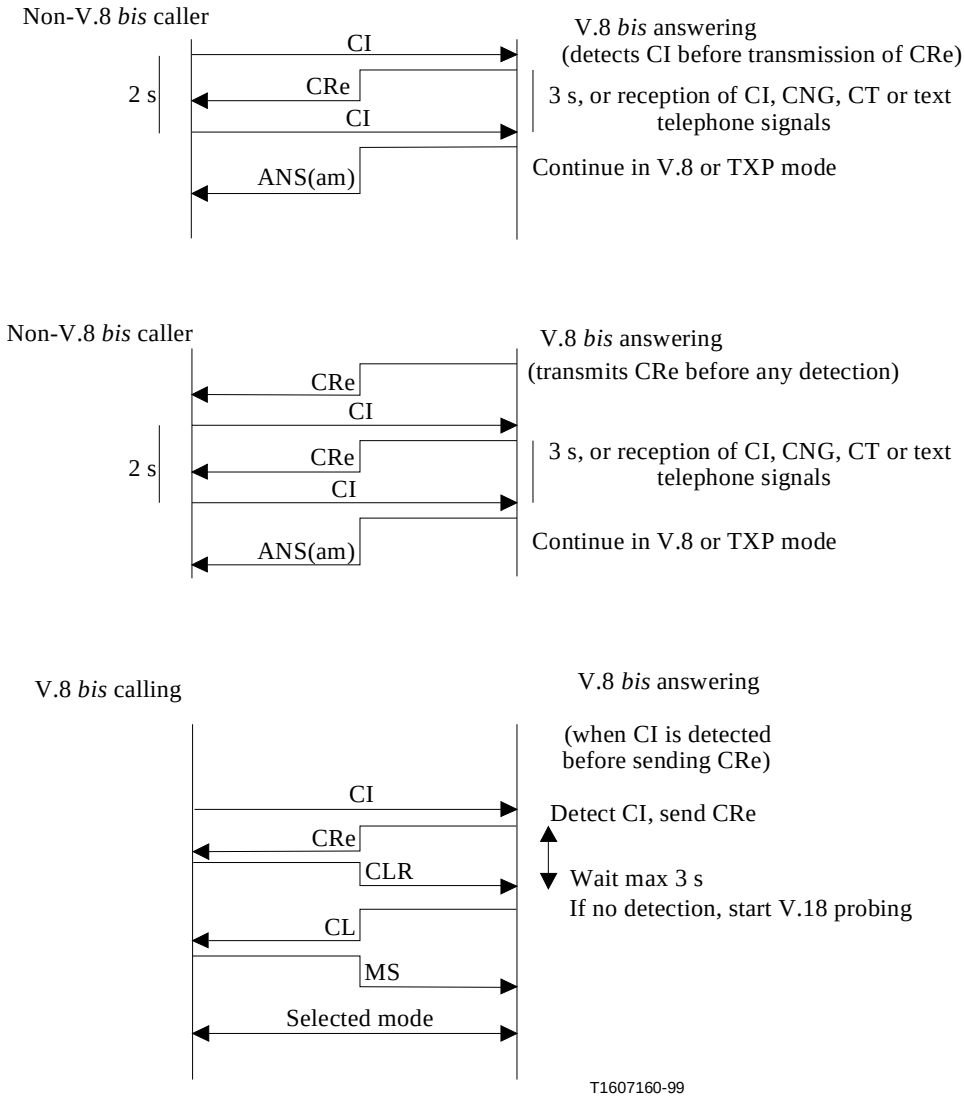

Figure III.1/V.18 – Connection examples

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