Recommendation T/SF 64 (Vienna 1989 (CAC))

TELEACTION SERVICE

Recommendation proposed by the Working Group T/WG 7 "Services and Facilities" (SF)

Text of the Recommendation adopted by the "Telecommunications" Commission:

"The European Conference of Postal and Telecommunications Administrations,

considering

— that Teleaction services already exist, are being established, and are evolving in a number of European countries,

— that there is a need for recognised Teleaction service standards,

— that there is advantage in currently pursuing a harmonised approach,

— that standards in associated fields (e.g. Alarm Services) are being established currently in other standards bodies,

— that there is an urgent need to consider the provision of Teleaction services over ISDN,

— that there is a trend in Europe to liberalise the supply of terminals,

recommends

— that the following service definition be adopted as the basis for the standard for the Teleaction services in Europe,

— that the items identified for further study and resolution be pursued, or drawn to the attention of the relevant bodies, as a matter of urgency."

Contents

1. **DEFINITION**

The Teleaction service is a telecommunication service providing a communication and allied processing service that sustains a low bit rate data exchange, used for the:
— monitoring
— indicating
— controlling and
— verifying
of remote:
— events
— operations and
— measurements

2. **DESCRIPTION**

2.1. **General Description**

2.1.1. The Teleaction service provides the capabilities of a telecommunications network that sustains the exchange of low bit rate digital information.

2.1.2. Data transmission shall be two-way simultaneous, two-way alternate or one-way dependent on the application requirement. The required directions of transmission are continuously available during the information transfer phase.

2.1.3. A Teleaction service will normally interconnect a number of end users (see 2.2.) to one or more receiving/ controlling centres (see 2.2.) such that messages from one end user will be conveyed to one or more receiving/controlling centres and/or messages received by a receiving/controlling centre will have come from a number of end users. The transmission of control/monitoring messages in the reverse direction is also a requirement.

2.1.4 Transmission delay shall conform to the delay categories of Table 1 (T/SF 64) (under 3.2.1.h)), as appropriate to the service application.

2.1.5. ENVISAGED APPLICATIONS are:
— *Alarm Indication*, for example:
  burglar or fire alarm (form end user's premises)
  flood (to end user's premises)
  personal alarm
— *Meter Reading*, for example:
  electricity
  gas
  water
— *Remote Control of Technical Devices*, for example:
  electricity load control
  reservoir level control
  building management
— *Surveillance*, for example:
  to be added

2.2. Specific Terminology

2.2.1. A NETWORK PROVIDER (normally a PTT Administration) is the one responsible for the installation and maintenance of the Teleaction service network excluding (possibly) the end user's terminal equipment.

2.2.2. An END USER is the one to whom an application service is provided, or who is affected by that application service (e.g. load control).
Note. End User to end user connections (via the TCU) are to be defined.

2.2.3. A SERVICE PROVIDER (SP) is one who uses the Teleaction network to provide application service to the end user. The SP will either be the network provider or the organisation responsible for one or more of the receiving/controlling centres.
— More than one SP or one type of service application may be available on a single Teleaction service network.

2.2.4. An END USER TERMINAL (EUT—see Figure 1 (T/SF 64)) (or REMOTE STATION) is a device (or the location of a device) that:
— generates information, on the basis of local conditions or by interrogation, and presents that information for transmission across the Teleaction network to one or more objective addresses (receiving/controlling centres),
— receives information from the Teleaction network in order to affect local conditions.

2.2.5. A SERVICE PROVIDER TERMINAL (SPT—see Figure 1 (T/SF 64)) (or a RECEIVING/CONTROL-LING CENTRE, REMOTE CENTRE or CENTRAL STATION) is a device (or the location of that device) that:
— receives information, from one or more EUTs, for data handling and processing in accordance with the service offered by the service provider application,
— monitors EUTs on the network, generates control messages and information requests, and presents that information for transmission to one or more EUTs.

2.2.6. A MONITORING CENTRE is a remote centre in which the status of the Teleaction service is (and supported services are) controlled and monitored. This may be part of a Receiving Centre, or another centre, e.g. PTT.

2.2.7. TELEACTION ACCESS CHANNEL: This is the transmission path between the EUT and the Teleaction supporting network.

2.2.8. TELEACTION DISTRIBUTION CHANNEL: This is the transmission path between the SPT and the Teleaction supporting network.

2.3. Qualifications

The access network options for the Teleaction service are:
— dedicated communication channels (including derived channels),
— Private Circuit, and
the following subject to study:
— ISDN
— other
Note. The technical options of ISDN and Fibre must be taken up for study as a matter of urgency, to ensure the ready availability of practicable and economical interfaces for an integrated Teleaction network.

3.   PROCEDURES

3.1.   Provision/Withdrawal

The Teleaction service shall be provided in response to:

a) A prior arrangement between a Service Provider and Teleaction network provider. (This implies an agreement between an End User and Service Provider.)

b) A prior arrangement between an End User and the Teleaction network provider.

3.1.1.   The service provider is responsible for ensuring that all other network providers (where they are involved) make the necessary provision, to secure the total Teleaction service provision for data transmission between the required end user and the required receiving/controlling centre.

3.1.2.   Confirmation of provision to the end user/service provider shall imply the provision of all concatenated networks, network elements and functional components, necessary to provide the Teleaction service.

3.1.3.   The transmission system shall be designed such that all operations associated with adding, changing or removing services apply to only those end users/service providers desiring the Teleaction service change.

3.2.   Normal Procedures

3.2.1.   *Activation/Deactivation/Registration*

a) The Teleaction Access Channel is activated by:

   i) Provision (this implies a dedicated transmission path). Thus the EUT will find the access channel continually available following provision.

   ii) Confirmation by the network of the Teleaction Distribution Channel: i.e. where it is necessary for the distribution channel to be active prior to activation of the access channel.

b) The Teleaction Distribution Channel is activated by:

   i) Provision (i.e. this channel is normally continually available).

   ii) The Teleaction Supporting Network (TSN) as and when the EUT requests a call establishment. The Teleaction Distribution Channel is activated by the TSN on receipt of a channel request by an EUT. It may be necessary to inhibit data transmission from the EUT until a distribution channel is established.

   iii) An SPT.

3.2.2.   *Operation*

a) Establishment of Communication: (see Provision). Information received from the EUT (and SPT) shall indicate the required objective address by:
   i)   path of entry
   ii) other (to be defined

b) Information Characteristics: The information structure may consist of:
   — single bits
   — groups of bits
   — octets of bits
   — groups of octets

c) Communication Configuration shall be:
   — point to point
   — point to multipoint
   — multipoint to point

d) Mode of Operation: The operation modes shall be:
   — one way
   — two-way alternate
   — two-way simultaneous

e) Transmission of Information conveying the state of the EUT may be:
   — continuous
   — periodic
   — by exception (when the state changes)
   — by interrogation
   Note. A separate and continuous monitoring signal may exist on the network.

f) Transmission Control: If transmission is not continuous, transmission shall be controlled by:
    — the EUT
    — the SPT
    — the transmission system

g) The Transfer of Information between an EUT and SPT shall not be blocked or corrupted by any other normal transmission of the transmission system. Transmission facilities shared with non-Teleaction services, or shared between different types of Teleaction service, shall be so arranged that operation and maintenance of the alternative services does not prevent the transmission system from meeting the Teleaction service requirements specified in this Recommendation. Likewise, Teleaction service operation and maintenance shall not interfere with the non-Teleaction and other services sharing the same transmission plant.

h) Information Transmission Delay: The time delay for the transmission of information across the Teleaction service network (see 2.1.4.) shall not exceed the limits of Table 1 (T/SF 64). Delay shall be measured from the time that the EUT (or SPT) changes state until the new state is reported to the SPT (or EUT).

Transmission Delay (in seconds)	Delay Category			
	D1	D2	D3	D4
Arithmetic Mean of all Transmissions	120	60	20	5
Upper 95 Percentile for all Transmissions	240	80	30	15
Maximum Acceptable Delay	480	120	50	20

Table 1 (T/SF 64). Transmission Delay.

Note 1. The delay may be different in each direction of transmission.

Note 2. The network provider should quote the delay options available for each type of service application available on the network.

k) Responsibility: Responsibility for the transfer of information across the Teleaction service network shall fall upon the Teleaction Network Provider.

l) Reliability: It should be possible to use one or more transmission systems, or one or more communication channels in one transmission system, between an EUT and an SPT.

m) Spare Paragraph:

n) Availability: The minimum availability of a Teleaction service connection between EUT and SPT shall be as specified in Table 2 (T/SF 64).

Teleaction Availability (in percent)	Availability Category		
	A1	A2	A3
Availability of overall system	99.55	99.8	99.99
Availability during any two-week period	90	97.5	99.9

Table 2 (T/SF 64). Teleaction Availability.

The minimum availability of a section of the Teleaction transmission system affecting sixteen or less stations may be that for the next lower grade of availability, provided that the availability of the sum of all sections meets the correct grade.

Note. The network provider should quote the availability options available for each type of service application available on the network.

p) Security:
    i)   No unauthorised access to end user data shall be allowed while it is in transit across, or storage in, the Teleaction network.
    ii) Security procedures shall be available to police unauthorised data traffic, and inhibit data from being presented from an unauthorised source.
    iii) The Teleaction service shall provide measures to prevent or detect deliberate attempts to block or interfere with the transmission of information.
    iv) The Teleaction network and terminating equipment shall have a degree of resistance to abuse and tampering, to be defined.

q) Interface: Standardized interfaces according to CCITT V- or X-series Recommendations should be used.

3.2.3. *Interrogation:* (The end user to interrogate the Service Provider: to be defined.)

3.3. **Exception Procedures**

3.3.1. *Activation/Deactivation*

    a) Deactivation: The end user shall be advised if the service at any time becomes:
    — unavailable
    — not active

3.3.2. *Operation*

    a) Abnormal signals and conditions which prevent the correct operation of the Teleaction network shall result in a fault signal.

    b) An alarm or fault signal shall be transmitted to the SPT in the event of failure of the connection between the EUT and SPT. The time to send this signal shall meet the periods cited in Table 1 (T/SF 64). (To be reconsidered.)

    c) For service applications having automatic monitoring, the maximum period from the time a fault develops in the Teleaction network until the fault information is reported to the SPT and/or monitoring centre shall be as classified in Table 3 (T/SF 64).

Fault Report Delay	Class			
	T1	T2	T3	T4
Maximum Period	25 h	65 m	90 s	20 s

Table 3 (T/SF 64).   Fault Report Delay.

Note 1. The Network provider should quote the fault report delay options available for each type of service application available on the network.

3.3.3. *Interrogation/Editing*

To be defined.

3.4. **Alternative Procedures**

To be defined.

3.4.1. *Activation/Deactivation*

3.4.2. *Operation*

3.5. **Verification**

(By the end user to verify service provided: to be defined.)

4. **NETWORK CAPABILITIES FOR CHARGING**

Charging is a national matter.

5. **INTERWORKING REQUIREMENTS**

To be defined.

6. **INTERACTION WITH OTHER SUPPLEMENTARY SERVICES**

To be defined.

Teleaction services may use the following supplementary services:
Date and Time Record
Code and Speed Conversion
Multi-address calling
Booked Call
Store and Forward transmission
Delayed delivery
Sub-addressing
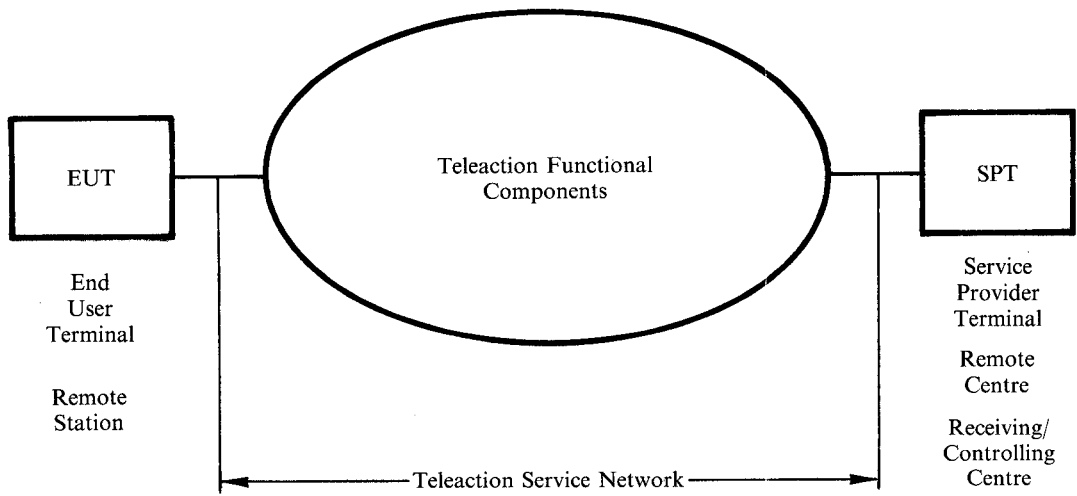Fault reporting
Traffic statistics
Redirection of calls

Figure 1 (T/SF 64).   The Teleaction Network.

Appendix 1

NETWORK OPTIONS

1. **INTRODUCTION**

Some network options identified below require urgent consideration if Administrations are to offer Tele-action service over those options such as ISDN.

2. **THE TELEACTION NETWORK OPTIONS**

2.1. **The Access Network** options are:

a) Subscriber analogue loops of the PSTN (including derived channels)
b) ISDN
c) Private Circuit

Note. It is recognised that some of the options above generally will not be economical in comparison with other options; but they are included as they are already in use for the provision of existing Teleaction services.

2.2. **The Teleaction Control and Concentration Unit**

One or more (remote stations) = end user terminals are connected to a central Teleaction Control unit, at which commands for the remote stations are generated and incoming Teleaction responses from the remote stations are processed.

2.3. **The Teleaction Distribution Network**

The distribution network options, providing access to the objective terminal, are:

a) Dedicated links (Private Circuits)
b) ISDN
c) CSPDN
d) PSPDN
e) PSTN