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TETRAPOL FORUM

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Foreword

This document is the Publicly Available Specification (PAS) of the TETRAPOL land mobile radio system, which shall provide digital narrow band voice, messaging, and data services. Its main objective is to provide specifications dedicated to the more demanding PMR segment: the public safety. These specifications are also applicable to most PMR networks.

This PAS is a multipart document which consists of:

Part 1 General Network Design

Part 2 Radio Air interface

Part 3 Air Interface Protocol

Part 4 Gateway to X.400 MTA

Part 5 Interface to dispatch centre

Part 6 Line Connected Terminal interface

Part 7 Codec

Part 8 Radio conformance tests

Part 9 Air interface protocol conformance tests

Part 10 Inter System Interface

Part 11 Gateway to PABX, ISDN, PDN

Part 12 Network Management Centre interface

Part 13 User Data Terminal to System Terminal interface

Part 14 System Simulator

Part 15 Gateway to External Data Terminal

Part 16 Security

Part 17 Guide to TETRAPOL features

Part 18 Base station to Radioswitch interface

Part 19 Stand Alone Dispatch Position interface

This interface, between a TETRAPOL SwMI and a PABX, provides private call facility between a TETRAPOL radio terminal and a PABX user.

It is designed as the external TETRAPOL R6 interface.

The **PABX user** is defined as a subscriber directly connected to a PABX or connected through an external network (public or private networkNo assumption is made concerning the type of PABX user, may be an analog set with DTMF or pulse dialling, a private digital set or an ISDN set or an external line, this shall have no effect on the interface.

The interface between TETRAPOL and PABX does not, therefore, assume any particular "intelligence" or knowledge of services on the PABX end terminal.

A TETRAPOL SwMI may be connected to any PABX which supports ISDN basic rate accesses with QSIG basic call signalling, in respect with the implementation constraints described hereafter.

1. Scope

This document applies to a MC9600 Regional Network interfacing with a PABX on a ISDN basic rate interface, based on LCT equipment with QSIG signalling.

Versions V01.xx of this document describe the interface with the previous equipment using ISDN S0 signalling.

2. Normative References

This PAS incorporates by dated and undated reference, provisions from other publications.These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this PAS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] ISO 8208: X.25 packet level protocol for data terminal equipment.

[2] ISO 8505 |ITU-T X.484: Open systems interconnection - X.400 Message Handling System - Protocol instance conformity statement (PICS) proforma.

[3] ISO 9595: Common management information service.

[4] ISO 9596: Common management information protocol.

[5] ITU-T X.217: Open systems interconnection - Association control service element (ACSE) - Service definition.

[6] ITU-T X.227: Open systems interconnection - Association control service element (ACSE) - Protocol specification.

[7] ISO 9072 |ITU-T X.219: Open systems interconnection - Remote operations - Model, Notation and service definition.

[8] ITU-T X.229: Open systems interconnection - Remote operations - Protocol specification.

[9] ISO 8822 |ITU-T X.216: Open systems interconnection - Presentation - Definition of service.

[10] ISO 8823 | ITU-T X.226: Open systems interconnection - Presentation - Protocol specification.

[11] ISO 8326 | ITU-T X.215: Open systems interconnection - Session - Definition of service.

[12] ISO 8327 |ITU-T X.225: Open systems interconnection - Session - Protocol specification.

[13] ISO 8072 |ITU-T X.214: Open systems interconnection - Transport - Definition of service.

[14] ISO 8073 | ITU-T X.224: Open systems interconnection - Transport - Protocol specification.

[15] ITU-T I.440: Integrated Services Digital Network - User-network interface - Data Link Layer general.

[16] ITU-T I.441: Integrated Services Digital Network - User-network interface - Data Link Layer specification.

[17] ITU-T I.450: Integrated Services Digital Network - User-network interface - Layer 3 general.

[18] ITU-T I.451: Integrated Services Digital Network - User-network interface - Layer 3 specification for basic call control.

[19] ETS 300-075: "Terminal equipment (TE); Processable data File transfer".

[20] ITU-T I.411: Integrated Services Digital Network - User-network interface - Reference configuration.

[21] ETS 300-113: "Radio Equipment and Systems (RES); Land mobile service; Technical characteristics and test conditions for radio equipment intended for the transmission of data (and speech) and having an antenna connector."

3. Definitions, symbols and abbreviations

3.1. Definitions

For the purposes of this PAS, the following definitions apply:

first defined term: Defining text.

second defined term: Defining text.

3.2. Symbols

A	Symbol 1
B	Symbol 2

3.3. Abbreviations

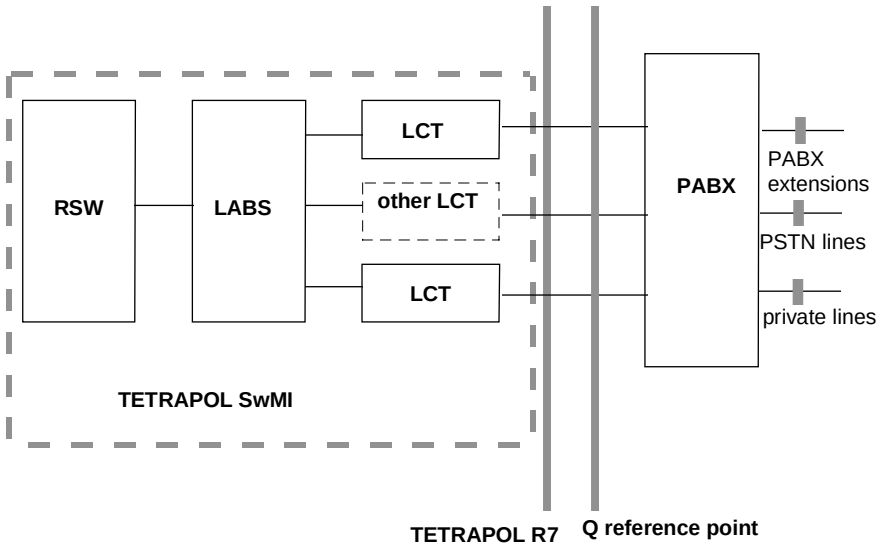
For the purposes of this PAS, the following abbreviations apply:

(P)DN	(Public) Data Network
A/I	Air Interface
BN	Base Network
BRI	Basic rate Interface
BS	Base Station
CCH	Control CHannel
CRP	Connexion Reference Point
CUG	Closed User Group
DB	DataBase
DC	Dispatch Centre
DCN	Delivery Confirmation Notification
DCS	Dispatch Centre Server
DFN	Delivery Failure Notification
DM	Direct Mode
DM/NM	Direct Mode / Network Monitoring
DP	Dispatch Position
DPS	Dispatch Position Switch
DPSI	Dispatch Position Switch Interface
EDT	External Data Terminal
FBM	FallBack Mode
HRSW	Home RadioSWitch
Incoming call	Call issued from PABX to the TETRAPOL network
ISI	Inter System Interface
KMC	Key Management Centre
LCIU	Line Connection Interface Unit
LCT	Line Connected Terminal

LCT	Line Connected Terminal
LLC	Logical Link Control
MAC	Medium Access Control
MM	Mobility Management
MOCH	Multisite Open CHannel
MRI	Mobile Random Identity
MS	Mobile Station
MSG APPLI	Messaging APPLIcation
NMC	Network Management Centre
OG	Operational Group
OMC	Operation and Maintenance Centre
Outgoing call	Call issued from TETRAPOL to the PABX
PABX	Private Automatic Branch eXchange
PDU	Protocol Data Unit
PRI	Primary Rate Interface
Primary rate interface	30B+D ISDN access
PSTN	Public Switched Telecommunications Network
PTT	Push-To-Talk
Q reference point	Reference point for private network interconnections.
QSIG	Inter PABX protocol standardised by ETSI, at Q reference point
Ri	Reference point index i
RP	RePeater
RSW	RadioSWitch
RT	Radio Terminal
SADP	Stand Alone Dispatch Position
SDL	Specification and Description Language
SDP	Submit Delivery Protocol
SFN	Submit Failure Notification
SIM	Subscriber Identity Module
ST	System Terminal
SwMI	Switching and Management Infrastructure
TCH	Traffic CHannel
TCP/IP	Transmission Control Protocol/Internet Protocol
TDX	Telephone and Data eXchange
TMSG-Id	Temporary MeSsaGe Identifier
TP	TransPort layer
TTI	Temporary Terminal Identifier
UA	User Agent
UDT	User Data Terminal
VRSW	Visited RadioSWitch
X.400 MTA	X.400 Message Transfer Agent

4. Description of the interface

4.1. Architecture



MODEL OF ARCHITECTURE AT R6 INTERFACE

At TETRAPOL side, the interface is supported by LCT's connected to the PABX at Q reference point on a basic rate ISDN interface.

The interface to PABX supports both speech in B channel and call control signalling in D channel.

Each LCT presents a basic rate connection to the PABX.

4.2. BASIC PRINCIPLES

4.2.1. Protocol

This interface uses the QSIG protocol that applies to inter PABX basic call as described in <A2, A3, A4>.

4.2.2. Access management

As a single LCT is attached to a BRI, only one call can be supported on a single B channel.

This feature shall be taken in consideration at PABX side for channel allocation. The PABX shall be able to consider both B channel as independent lines and be able to have only one of them in service.

4.2.3. Interworking concept

TETRAPOL SwMI and PABX are considered as two independent networks, each one having its own numbering scheme and routine procedures.

The only common resources are the lines that connect SwMI to PABX.

An end to end call between TETRAPOL and PABX is considered as two calls set up in each network and joined together by the LCT that acts as a transit equipment.

4.2.4. Features

The interface shall support incoming and outgoing calls between a PABX user and a TETRAPOL user.

An incoming call is set up by a PABX user. Transit from another private or a public network is possible according to the PABX transit facilities.

Outgoing calls may be directed to a PABX user or to a user in an external public or private network, according to the PABX transit facilities.

PABX do not handle priority and pre-emption.

The management of an outgoing call set up with FLASH priority is handled without pre-emption. The TETRAPOL network releases the interrupted call before presenting the new one. The PABX access sees only two consecutive calls.

4.2.5. Addressing

4.2.5.1. PABX side

The group of LCT is managed like a trunk line group.

After line selection, the calling party shall be designated by the called party number in the TETRAPOL numbering scheme.

Called party is mandatory and must always be given in full RFSI format, short forms like FSI are not allowed.

As a consequence, the calling subscriber shall be able to supply his correspondent RFSI address, or a dispatcher RFSI address

Some help may be supplied by the PABX itself, for example by the means of short dialling.

4.2.5.2. TETRAPOL side

LCT's dedicated to PABX access are addressed in TETRAPOL by an implicit address.

Each LCT contains a default complementary address, set up by configuration of the LCT. This shall be an address taken from the PABX numbering scheme.

LCTs included in a same implicit address shall have the same default PABX complementary address. The consistence is not checked by TETRAPOL.

The calling party shall dial an address in two parts :

main address: implicit TETRAPOL address of LCT (mandatory)

complementary address (optional): called party identity in PABX numbering scheme. If the complementaty address is not supplied by the calling party, the LCT uses its default address.

TETRAPOL uses the complementary address as the called party address in the QSIG SETUP message.

A call set up with an explicit LCT TETRAPOL address will be rejected by the SwMI.

4.2.6. Supplementary services

The following supplementary services are supported in accordance with PABX possibilities :

calling party identity
called party identity
call back (calls logging book)

5. PHYSICAL Layer

The physical level is described in <A4>.

The LCT is connected to a PABX in point to point topology on a S0 bus (max. range = 800 m).

The clock shall be supplied by the PABX.

The LCT is locally powered.

6. DATA LINK layer (LAP-D)

The D channel and a single B channel shall be on the interface.

The network layer procedures shall use the data link layer (LAP-D) services and shall receive information from the data link layer by using the primitives designed for the link access protocol on D channel of the ISDN user-network interface, deescribed in <A3>.

The SwMI interface side shall be configured as a terminal side equipment (TE1). The PABX interface side shall be configured as a network side equipment (TN2).

The data link connection shall be established before any of the procedures defined in this specification can be performed.

The LAP-D shall be set up by the SwMI.

The requested LAP-D parameters shall be the following :

- TEI = 00h : value reserved to QSIG in recommendation<A3>
- segment size = 260 bytes

7. Network layer protocol (QSIG)

The protocol is the QSIG protocol for basic call described in document <A2> that constitutes the reference.

7.1. Messsages length

Messages segmentation feature is not supported

A layer-3 message is limited to a single LAP-D segment (260 bytes).

7.2. messages coding

7.2.1. Messages for general procedure

7.2.1.1. Status

Conform with <A2>

7.2.1.2. Status enquiry

Conform with <A2>

- Never sent by the SwMI
- When receiving this message, the SwMI shall send STATUS

7.2.2. MESSAGES FOR CONNECTIONS IN CIRCUIT MODE

7.2.2.1. ALERTING

Conform with <A2>

Indicates that the called party is ringing or advised.

a) Outgoing call (message from PABX to TETRAPOL)

Local PABX call : the call is presented to a PABX subscriber

Transit : the PABX has received CALLED PARTY STATE = FREE from the external network

b) Incoming call (message from TETRAPOL to PABX)

The TETRAPOL subscriber is located, free and rings.

The PABX connects the subscriber on the call back tone (PABX function)

7.2.2.2. CALL_PROCEEDING

Conform with <A2>

Indicates that the called side has all information needed to handle the call, but cannot send soon ALERTING

CALL_PROCEEDING is sent by the SwMI after SET_UP.

CALL_PROCEEDING may be sent by the PABX for an outgoing call but it is not mandatory.

7.2.2.3. CONNECT

Conform with <A2>

Indicates that the called party has answered and that the speech connection can be achieved.

Speech connection when received

7.2.2.4. CONNECT_ACKNOWLEDGE

Conform with <A2>

Acknowledgement of CONNECT message.

It is not an end to end connection acknowledgement. It concerns only the line between SwMI and PABX (B-channel connection on the QSIG interface).

Speech connection when received

7.2.2.5. DISCONNECT

When received, the PABX connects the busy tone.

Means that one party has gone on hook, or that the call must be released for an other reason.

7.2.2.6. INFORMATION

Not used (no overlap dialling)

7.2.2.7. PROGRESS

Not used

7.2.2.8. RELEASE

Conform with <A2>

7.2.2.9. RELEASE_COMPLETE

Conform with <A2>

Acknowledges the release signal.

The line returns to idle state.

7.2.2.10. SET_UP

Conform with <A2>

Blocked dialling is mandatory

7.2.2.11. SET_UP ACKNOWLEDGE

Not used

7.2.3. Messages for layer management

7.2.3.1. RESTART

Conform with <A2>

Never sent by the SwMI.

When received, the SwMI shall send RESTART_ACKNOWLEDGE

7.2.3.2. RESTART_ACKNOWLEDGE

Conform with <A2>

7.2.4. Others

7.2.4.1. FACILITY

Not used

7.2.4.2. Notify

not used

7.3. information elements

7.3.1. protocol discriminator

Conform with <A2>

7.3.2. call reference

Conform with <A2> with

length = 2

(total length of information element = 3 bytes)

7.3.3. message type

Conform with <A2>

7.3.4. Other information elements for basic call control

7.3.4.1. Extension of codesets

not used

7.3.4.2. Locking shift procedure

not used

7.3.4.3. Non locking shift procedure

not used

7.3.4.4. Bearer capability

Conform with <A2> with the following values :

- coding standard = CCITT
- information transfer capability = SPEECH or UNRESTRICTED DIGITAL INFORMATION, configurable according to PABX requirement (default value = UNRESTRICTED DIGITAL INFORMATION)
- information transfer rate = 64 kbps/s
- user information layer 1 = G 711 A-law

7.3.4.5. Call state

Conform with <A2>

7.3.4.6. Called party number

Conform with <A2>

a) Outgoing individual call (TETRAPOL to PABX)

The CALLED PARTY IDENTITY is mandatory. If not supplied by the calling party, the SwMI inserts a default address that points out dedicated PABX extension.

This default address is defined by LCT configuration.

b) Incoming individual call (PABX to TETRAPOL)

CALLED PARTY IDENTITY : coded in RFSI form.

7.3.4.7. Called party subaddress

Not used

7.3.4.8. Calling party number

Conform with <A2>

a) *Outgoing individual call (TETRAPOL to PABX)*

The CALLING PARTY IDENTITY field contains the calling party RFSI address.

This information may be omitted.

b) *Incoming individual call (PABX to TETRAPOL)*

The CALLING PARTY IDENTITY is set up by the SwMI with its own explicit RFSI address.

7.3.4.9. Calling party subaddress

Not used

7.3.4.10. Cause

Conform with <A2>

7.3.4.11. Channel identification

Conform with <A2> with the following values :

- length of channel identification contents = 3
- Exclusive B1

'Total length of information element = 5 bytes)

7.3.4.12. Connected number

not used

7.3.4.13. Connected subaddress

not used

7.3.4.14. High layer compatibility

Conform with <A2> with the following parameters

Telephony

7.3.4.15. Low layer compatibility

Not used

7.3.4.16. Progress indicator

not used

7.3.4.17. Restart indicator

Conform with <A2>

7.3.4.18. Segmented message

not used (segmentation not supported)

7.3.4.19. Sending complete

Conform with <A2>

7.3.5. Others

Other information elements are not sent by the SwMI and ignored if received.

7.3.5.1. Party category

not used

7.3.5.2. Transit counter

not used

7.3.5.3. Facility

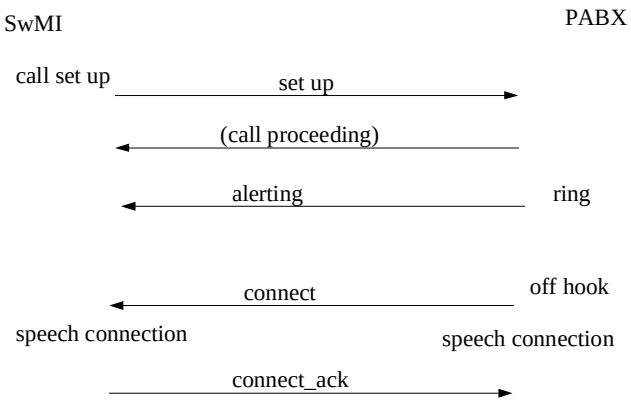
not used

8. CALL CONTROL PROCEDURES

NOTE : the operations described at PABX side are suggested. They are out of the scope of the specification

8.1. Outgoing call

8.1.1. Successful



CALL_PROCEEDING is not mandatory. The SwMI shall be able to receive it or not.

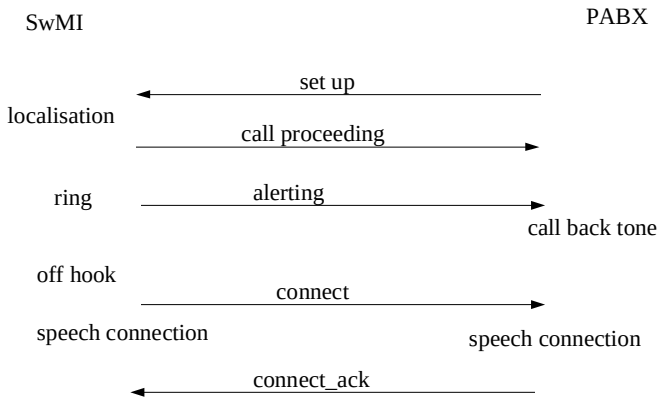
8.1.2. Release of calling party

New outgoing calls are dropped as long as RELEASE_COMPLETE is not sent.

8.2. Incoming call

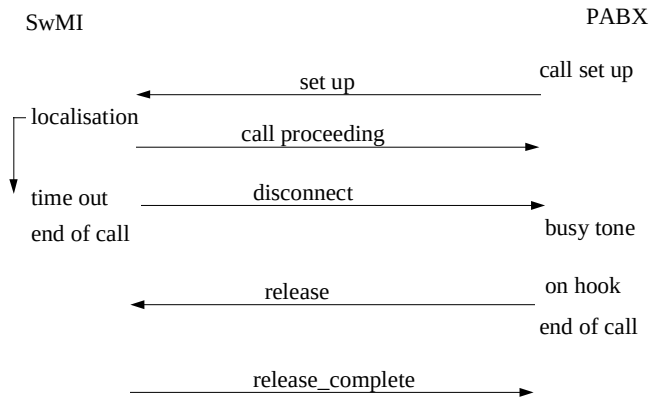
The following description applies also to multiparty call.

8.2.1. Successful



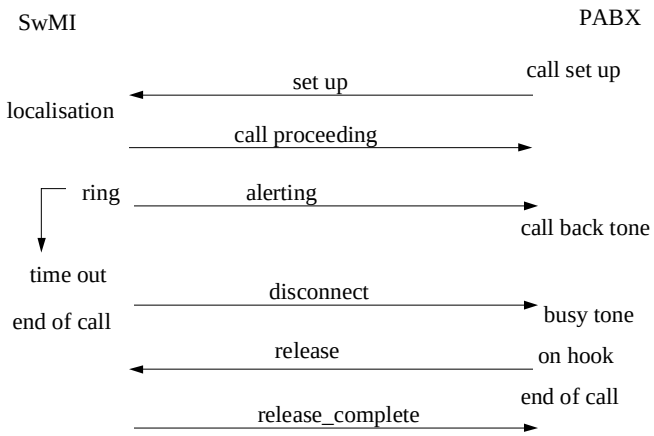
Due to the delay needed to reach the radio subscriber, the usage of CALL_PROCEEDING is mandatory.

8.2.2. Radio subscriber busy or not reachable

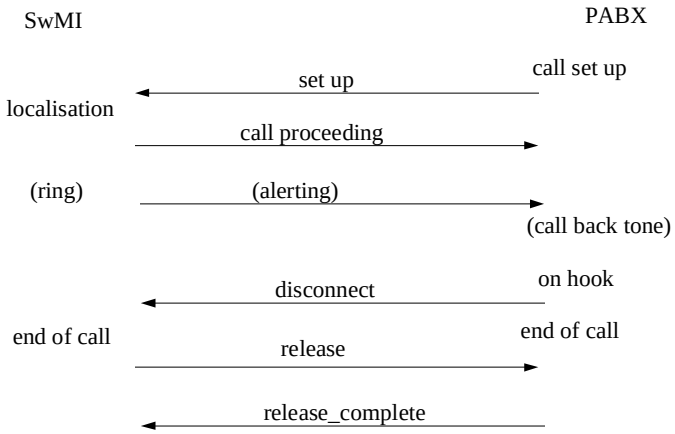


RELEASE may be sent instead of DISCONNECT, if CALL_PROCEEDING has not been sent.

8.2.3. Radio subscriber does not answer



8.2.4. Release of calling party during setting up



ALERTING may be have sent or not.

8.2.5. Collision

In this situation, the outgoing call has priority as well in the PABX and in the SwMI.

At the PABX interface, it is true only if CALL_PROCEEDING or ALERTING is not received.

8.3. Ongoing call

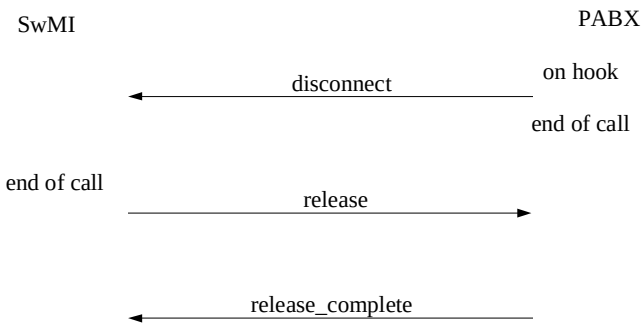
No call control signals are supplied on this interface.

The SwMI generates push to talk signal by the means of voice activity detection.

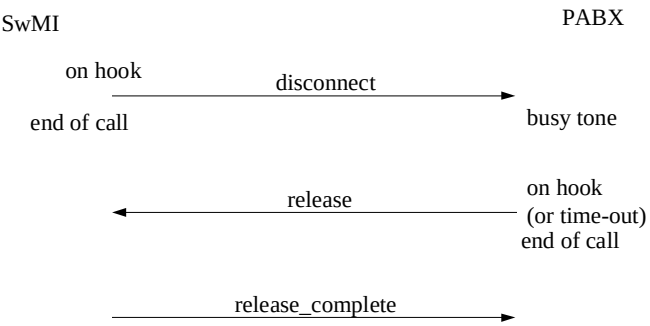
Note that if the PABX side handles a multiparty call (conference), no exclusion between speaking participants may be achieved : the signal delivered by the vocoder may be not understandable.

8.4. Call release

8.4.1. Release at PABX side



8.4.2. Release at radio side



9. Protocol Implementation

This chapter contains protocol implementation conformance statements (PICS) concerning circuit mode basic services that must be used as reference document for QSIG signalling design.

Annex A (normative): Protocole Implementation conformance statement

PICS for ISO/IEC 11572

A.1. Introduction

The supplier of a protocol implementation which is claimed to conform International Standard ISO/IEC 11572 shall complete the following Protocol Implementation Conform Statement (PICS) proforma. A completed PICS proforma is the PICS for the implementation in question.

The PICS is a statement of which capabilities and options of the protocol have been implemented. The PICS can have a number or uses :

- by the protocol implementor, as a check list to reduce the risk of failure to conform to the standard throgh oversight ;

- by the supplier and acquirer (or potential acquirer) of the implementation, as a detailed indication of the capabilities or the implementation, stated relative to the common basis for understanding provided by the standards PICS proforma;

- by the user (or potential user) of the implementation, as a basis for initially checking the possibility of interworking with another implementation (note that, while interworking can never be guaranteed, failure to interwork can ofthen be predicted from incompatible PICS);

- by a protocol tester, as the basis for selecting appropriate test against which to access the claim for conformance of the implementation

A.2. Instructions for completing the PICS PROFORMA

A.2.1. General structure of the PICS Proforma

The PICS Proforma, when completed by the supplier, becomes the Protocol Implementation Conformance statement (PICS) for the implementation.

Each item is identified by an item reference in the first column; the second column contains the question to be answered; the third column contains the references to the material that specifies the item in the main body of the standard. The remaining columns record the status of the item - whether support is mandatory, optional or conditional - and provide space for the answers.

A supplier may also provide - or be required to provide - furher information, categorized as either Additional Information or Exception Information. When present, each kind of further information is to be provided in a further subclause of items labelled a.<I> or x.<I> respectively for cross-referencing purposes, where « i » is any unambiguous identification for the item (e.g., simply a numeral); there are no other restriction on its format and presentation.

The following terms are used in the « status » column of the tables in clause 4 :

m mandatory (the capability is required for conformance to the protocol).

o optional (the capability is required for conformance to the protocol, but if the capability is implemented it is required to conform to the protocol specifications);

o.<n> optional, but support of at least one of the group of options labelled by the same numeral <n> is required.

p prohibited.

c.<cid> conditional (with reference to a predicate, if the option is chosen then the subjugate condition is mandatory).

<item> simple-predicate condition (dependant on the support marked for <item>

A.2.2. Additional information

Items of Additional Information allow a supplier to provide further information intended to assist the interpretation of the PICS. It is not intended or expected that a large quantity will be supplied, and a PICS can be considered complete without any such information. Examples might be an outline or the ways in which a (single) implementation can be set up to operate in a variety of configurations and environments.

References to items or Additional Information may be entered next to any answer in the questionnaire, and may be included in items of Exception information.

A.2.3. ExCeption information

It may occasionally happen that a supplier will wish to answer an item with mandatory or prohibited status (after conditions have been applied) in a way that conflicts with the indicated requirement. No pre-printed answerwill be found in the Support column for this; instead, the supplier is required to write into the support column an x. <i> reference to an item of Exception Information, and to provide the appropriate rationale in the Exception item itself.

An implementation for which an Exception item is required in the way does not conform to ISO/IEC 11572.

NOTE - A possible reason for the situation described above is that a defect in ISO/IEC 11572 has been reported, a correction for which is expected to change the requirment not met by the implementation.

A.3 Identification

A.3.1 Implementation Identification

Supplier (note 1)	MATRA Communication
Contact point for queries about the PICS (note 1)	
Implementation Name(s) and Version(s) (note 1, note 2)	
Other information necessary for full identification -e.g., name(s) and version(s) for machines and/or operating systems; System name(s)	MC9600 V33 PABX interface

NOTES

1 Only the first three items are required for all implementations, other information may be completed as appropriate in meeting the requirement for full identification.

2 The Items Name and Version should be interpreted appropriately to correspond with a suppliers terminology (e.g; Type, Series, Model).

A.3.2 Protocol Summary, ISO/IEC 11572

Protocol version	First Edition
Addenda Implemented (if applicable)	
Amendments Implemented	
Have any exception items been required ?	NO [X] YES [ ] The answer YES means that the implementation does not conform to ISO/IEC 11572.
Date of Statement	

A.4. PICS Proforma

A.4.1 Bearers Supported

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
Z1	Support of the 64 kbit/s Urestricted bearer	14.5.5	o.1		YES [X] NO[ ]
Z2	Support of the 64 kbit/s Bearer with Speech Transfer Capability	14.5.5	o.1		YES [X] NO[ ]
Z3	Support of the 64 kbit/s Bearer with 3.1.kHz/Audio Transfer Capability	14.5.5	o.1		YES [ ] NO[ ]

A.4.2. General procedures

A.4.2.1. Use of the services of the Signalling Connection Mechanism

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
A1	Use of the services of the Signalling Connection Mechanism	9.1	m		YES [X]

A.4.2.2 Handling of Protocol Error Conditions

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
A6	Treatment of protocol discriminator error	9.2.1.	m		YES [X]
A7	Treatment of mesage too short	9.2.2.	m		YES [X]
A8	Treatment of call reference error	9.2.3.	m		YES [X]
A9	Treatment of mesage type or message sequence errors	9.2.4.	m		YES [X]
A10	Treatment of information element errors	9.2.5. - 9.2.7.	m		YES [X]
A11	Signalling Carriage Mechanism reset	9.2.8.	m		YES [X]
A12	Signalling Carriage Mechanism failure	9.2.9.	m		YES [X]

A.4.2.3. Status and Status Enquiry protocol procedures

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
A13	Receipt of a STATUS ENQUIRY message	9.3.1.	m		YES [..
A14	Sending of a STATUS ENQUIRY message	9.3.1.	o		YES [ ] NO[X]
A15	Receipt of a solicited STATUS message	9.3.2.	c.1		YES [X] NO[ ]
A16	Receipt of an Unsolicited STATUS message	9.3.2.	m		YES [X]

C.1 If A11 then mandatory else optional

A.4.3. Circuit Switched Call Control

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
B1	Is the implementation capable of functioning as an Originating PINX ?	10.5	o.2		YES [X] NO[ ]
B2	Is the implementation capable of functioning as an Incoming Gateway PINX ?	10.7	o.2		YES [X] NO[ ]
B3	Is the implementation capable of functioning as a Transit PINX ?	10.4	o.2		YES [ ] NO[ ]
B4	Is the implementation capable of functioning as a Terminating PINX ?	10.6	o.2		YES [X] NO[ ]
B5	Is the implementation capable of functioning as an Outgoing Gateway PINX ?	10.8	o.2		YES [X] NO[ ]
B6	Support procedure for call request	10.1.1.	c.2	[ ]	YES [X]
B7	Does the implementation include a Sending Complete information element in every generated SETUP message ?	10.1.1	c.3	[ ]	o:YES [X] NO [ ]
B8	Information channel selection	10.1.2	m	[ ]	YES [X]
B9	Overlap Receiving procedures	10.1.3	c.4(note 1)	[ ]	YES [X](note 1)
B10	Overlap Sending procedures	10.1.3	c.5	[ ]	YES [..]
B11	Call proceeding - Enbloc Sending (Receip and Origination)	10.1.4/10.1.4.1.	m	[ ]	YES [X]
B12	Receipt of Call Proceeding - Overlap Sending	10.1.4/10.1.4.2.	B10:m	[ ]	YES [X]
B13	Sending of Call Proceeding - Overlap Receiving	10.1.4/10.1.4.2	B9:m	[ ]	YES [X]
B14	Support of ALERTing origination	10.1.5	c.4	[ ]	YES [X]
B15	Support of ALERTing termination	10.1.5	c.2	[ ]	YES [X]
B16	Support of call connection procedures	10.1.6	m (note2)	[ ]	YES [X] (note 2)
B17	Sending of call progress information during call establishment	10.1.7	c.2	[ ]	YES [X]
B18	Receipt of call progress information during call establissment	10.1.7	m		YES [X]
B19	Support of call clearing procedures	10.2	m		YES [X]
B20	Support of call collision procedures	10.3	m		YES [X]

NOTES

1 : If enbloc signalling only is used between two adjacent PINXs, overlap receiving procedures need not to be tested.

2 : If by mutual agreement between adjacent PINXs T313 is not implemented, then the sending of Connect Acknowledge message is optional.

c.2 If B1 OR B2 OR B3 then mandatory else N/A

c.3 If B1 OR B2 OR B3 then optional else N/A

c.4 If B3OR B4 OR B5 then mandatory esle N/A

c.5 If (B1 OR B2 OR B3) AND NOT B7 then mandatory esle N/A

A.4.4. Call Control at a Transit PINX

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
C1	Call origination/termination procedures	104/10.4.1 to 10.4.9	B3:m	[ ]	YES [ ]
C2	Call abort procedures	10.4.10.2	B3:o		o:YES[ ] NO[ ]
C3	Call clearing procedures	10.4.10.1	B3:m	[ ]	YES [ ]
C4	Handling of Category 1, 2 and 3 information elements at a Transit PINX	10.4.11	B3:m	[ ]	YES [ ]

A.4.5 Call Control at a Originating PINX

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
D1	Call origination procedures	10.5/10.5.1 to 10.5.5	B1:m	[ ]	YES [X]
D2	Call clearing procedures	10.5.6	B1:m	[ ]	YES [X]

A.4.6 Call Control at a Terminating PINX

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
E1	Call termination procedures	10.6/10.6.1 to 10.6.4	B4:m	[ ]	YES [X]
E2	Call clearing procedures	10.6.5	B4:m	[ ]	YES [X]

A.4.7 Call Control at an Incoming Gateway PINX

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
F1	Establishment of calls from another network	10.7/10.7.1 to10.7.6	B2:m	[ ]	YES [X]
F2	Call clearing procedures	10.7.7	B2:m	[ ]	YES [X]

A.4.8 Call Control at an Outgoing Gateway PINX

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
G1	Establishment of calls from another network	10.8/10.8.1 to10.8.5	B5:m	[ ]	m:YES [X]
G2	Call clearing procedures	10.7.7	B5:m	[ ]	m:YES [X]

A.4.9 Procedures for Layer Management

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
H1	Initiation of Restant procedures - All channels	10.5	o		YES [X] NO[ ]
H2	Initiation of Restant procedures - Single channels	10.7	o		YES [ ] NO[ ]
H3	Receipt of RESTART - All channels	10.4	m		YES [X]
H4	Receipt of RESTART - Single channels	10.6	m		YES [X]
H5	Restart procedures - Restart Collision	10.8	(H1 OR H2) : m		m:YES [X]

A.4.10 Timers

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
I1	Implementation of T301	12	c.6	[ ]	o:YES[ ] NO[ ] value [ ]
I2	Implementation of T302	12	c.7	[ ]	m: YES [ ]
I3	Implementation of T303	12	c.8	[ ]	m: YES [ ]
I4	Implementation of T304	12	B10:m	[ ]	m: YES [ ]
I5	Implementation of T305	12/10.2.3	m		YES [ ]
I6	Implementation of T308	12/10.2.	m		YES [ ]
I7	Implementation of T309	12	m		YES [ ] value [ ]
I8	Implementation of T310	12	c.9	[ ]	m: YES [ ] o: NO [ ] value [ ]
I9	Implementation of T313	12	c.10	[ ]	o:YES[ ] NO[ ]
I10	Implementation of T316	12/11.1.1	c.11	[ ]	m: YES [ ]
I11	Implementation of T322	12/903.1	A14:m	[ ]	m: YES [ ]

c.6 If B1 OR B2 OR B3 then optional else N/A

c.7 If B3 OR B4 OR B5 then mandatory else N/A

c.8 If B1 OR B2 OF B3 then mandatory else N/A

c.9 If B1 OR B2 mandatory

else if B3 optional

else N/A

c.10 If B3 OR B4 OR B5 then optional else, N/A

c.11 If H1 OR H2 then mandatory else N/A

A.4.11 Messages and information elements for general procedures

NOTE - Although an implementation may be marked « yes » for questions regarding sending optional information elements, they will only be sent, for example, if they are received from a terminal or a proceding PINX.

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
J1	Receipt of the messages in accordance with the procedures supported, and receipt of all the permitted information elements in those messages	13	m		YES [X]
J2	Sending of messages, including for each message those information elements marked as mandatory for that message, in accordance with the procedures supported	13	m		YES [X]
J3	Sending of the Channel Identification infomation element when mandatory in a SETUP ACKNOWLEDGE, CALL PROCEEDING, ALERTING or CONNECT message when that message is the first response to a SETUP message	13	m		YES [X]
J4	Sending of Sending Complete information element in an INFORMATION message when overlap sending is complete	13.2.6	o		YES [ ] NO[ ]
J5	Sending of a Progress indicator information element in an ALERTING message (except when relaying at a Transit PINX in accordance with C4)	13.2.1	o		YES [ ] NO[ ]
J6	Sending of a Progress Indicator information element in a CONNECT message (except when relaying at a Transit PINX in accordance with C4)	13.2.3	o		YES [ ] NO[ ]
J7	Sending of a Low layer compatibility information element in a CONNECT message (except when relaying at Transit PINX in accordance with C4)	13.2.3	o		YES [ ] NO[ ]
J8	Sending of a Connected Number information element in a CONNECT message (except when relaying at a Transit PINX in accordance with C4)	13.2.3	o		YES [ ] NO[ ]
J9	Sending of a Connected Subadress information element in a CONNECT message (except when relaying at a Transit PINX in accordance with C4)	13.2.3	o		YES [ ] NO[ ]
J10	Sending of a Cause Information element in a PROGRESS message (except when relaying at a Transit PINX in accordance with C4)	13.2.7	o		YES [ ] NO[ ]
J11	Sending of a Cause Information element in a RELEASE or a RELEASE COMPLETE message when it is not the first				

	clearing message	13.2.8, 13.2.9	o		YES [X] NO[ ]
J12	Sending of a Sending Complete Information element in a SETUP message when enbloc sending	13.2.10	O		YES [X] NO[ ]

ITEM	QUESTION/FEATURE	REFERENCE	STATUS	N/A	SUPPORT
J13	Sending of a Progress Indicator information element in a SETUP message (except when relaying at a Transit PINX in accordance with C4)	13.2.10	O		YES [ ] NO[ ]
J14	Sending of a Calling Number information element in a SETUP message (except when relaying at a Transit PINX in accordance with C4)	13.2.10	O		YES [X] NO[ ]
J15	Sending of a Calling party Subaddress information element in a SETUP message (except relaying at a Transit PINX in accordance with C4)	13.2.11	O		YES [ ] NO[ ]
J16	Sending of a Called Party Subaddress information element in a SETUP message (except when relaying at a Transit PINX in accordance with C4)	13.2.11	O		YES [ ] NO[ ]
J17	Sending of a Low Layer Compatibility information element in a SETUP message (except when relaying at a Transit PINX in accordance with C4)	13.2.10	O		YES [ ] NO[ ]
J18	Sending of a High Layer Compatibility information element in a SETUP message (except when relaying at a Transit PINX in accordance with C4)	13.2.10	O		YES [ ] NO[ ]
J19	Sending af a Channel Identification information element in a RESTART message	13.3.1	H2:m	[ ]	YES [ ]
120	Sending of a channel Identification information element in a RESTART ACKNOWLEDGE message	13.3.2	O		YES [ ]
J21	Support of a channel map	14.5.12	O		YES [ ] NO[ ]
J22	Type of number supported for ISDN Telephony Numbering Plan Unknown International number National NUMBER Network specific number	14.5.7	O		 YES [X] NO[ ] YES [ ] NO[ ] YES [ ] NO[ ] YES [ ] NO[ ]
J23	Type of number supported for Private Numbering Plan Unknown Level 2 regional number Level 1 regional number PISN specific number	14.5.7	O		 YES [X] NO[ ] YES [ ] NO[ ] YES [ ] NO[ ] YES [ ] NO[ ]

	Level 0 regional number Abbreviated number				YES [ ] NO[ ] YES [ ] NO[ ]
J24	Type of number supported for Unknown Numbering PLAN Unknown	14.5.7	O		YES [X] NO[ ]
J25	Message formats and codings for messages and information elements supported	14	m		YES [X]

History

Document history		
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