

PIC 01

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Especificações e Condições Técnicas

Protocolo QSIG

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1. Objectivo

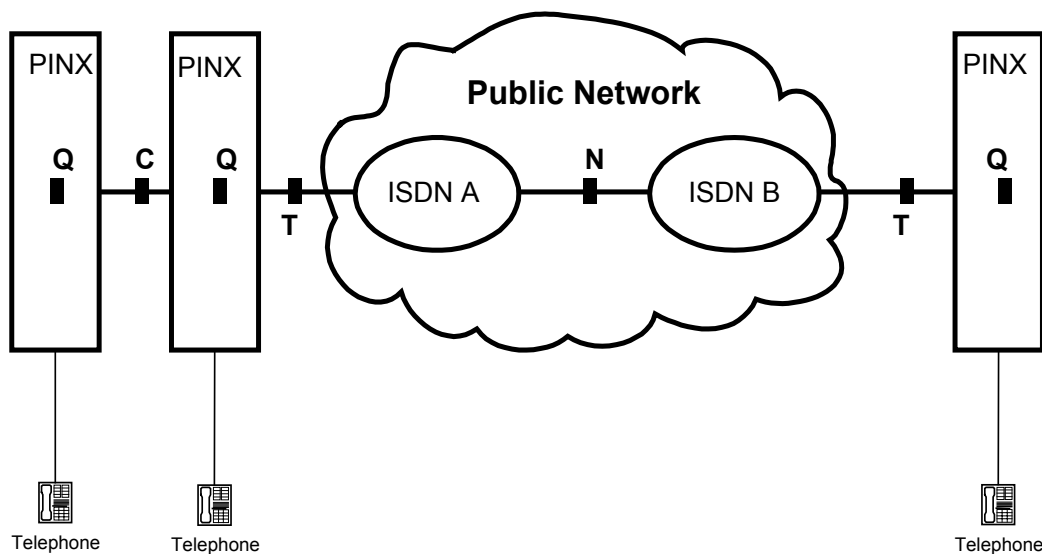
Esta especificação pretende definir as características técnicas gerais do protocolo QSIG.

Este protocolo deverá suportar a interligação de redes privadas Corporativas, em ambiente multivendor garantindo o suporte de todas as funcionalidades existentes na rede privada com protocolos proprietários.

2. Pontos de referência

A figura 1 representa a interligação de uma rede privada ISDN com a rede pública ISDN, estando indicados os principais pontos de referência.

Figura 1 Modelo de referência incluindo redes Corporativas



PINX – Private Integrated services Network EXchange

Q – Ponto de referência lógico de sinalização entre dois PINX

C – Ponto de referência de interligação entre dois PINX.

T – Ponto de referência de interligação entre redes pública e privada

N – Ponto de referência de interligação na rede Pública (sinalização ISUP)

O protocolo QSIG é definido entre os pontos referência lógica "Q"

3. QSIG Protocolo Stack

O seguinte quadro representa o protocol stack para o QSIG, com referência às normas aplicáveis

Layer	Standards			Description
Layer 4 - 7	Application mechanisms included: ROSE (Remote Operation Service Elements) ACSE (Association Control Service Elements)			End-to-End protocol network transparent
Layer 3	See TABLE 1			QSIG Procedures for Supplementary Services
	IS11582, ECMA165		ETS300239,	QSIG Generic Functional Procedures
	IS11574/11572, ETS300 171/172, ECMA142/143			QSIG Basic Call
Layer 2	ECM141, ETS300 402			Interface-dependent protocols
Layer 1	Basic rate access ETS300 012 I.430	Primary rate access ETS300 011 I.431		
Medium	Copper Wire	Copper Wire	Optical Fiber	

QSIG Protocol Stack at "Q" Reference Point

4. QSIG Standards

O protocolo QSIG baseia-se nas recomendações do ITU-T para DSS1, série Q.93x, para serviços básicos e Q.95x para serviços suplementares, garantindo-se assim a compatibilidade de serviços entre as redes ISDN pública e privada.

Para além dos serviços suplementares suportados pelo DSS1, o QSIG fornece facilidades adicionais desenhadas para uso em redes Corporativas.

Na tabela 1 são indicadas as normas aplicáveis para os serviços QSIG

TABELA 1

QSIG Service Name	ECMA Standard	ETSI Standard	ISO/IEC Standard
Basic Call (64kb/s unrestricted, 3.1kHz audio and speech bearer services)	ECMA-142/143	ETS300 171/172	IS 11574/11572
Calling Line Identification Presentation	ECMA-148 Note 1	ETS300 173 Note 1	IS 14136 1995 Note 1
Connection Line Identification Presentation	ECMA-148 Note 1	ETS300 173 Note 1	IS 14136 1995 Note 1
Calling/Connected Line Identification Restriction	ECMA-148 Note 1	ETS300 173 Note 1	IS 14136 1995 Note 1
Calling Name Identification Presentation	ECMA 163/164	ETS300 237/238	IS 13864/13868
Connected Name Identification Presentation	ECMA 163/164	ETS300 237/238	IS 13864/13868
Calling/Connected Name Identification Restriction	ECMA 163/164	ETS300 237/238	IS 13864/13868
Generic Functional Procedures	ECMA 165	ETS300 239	IS 11582 1995
Call Forwarding Unconditional	ECMA 173/174	ETS300 256/257	IS 13872/13873
Call Forwarding Busy	ECMA 173/174	ETS300 256/257	IS 13872/13873
Call Forwarding No Reply	ECMA 173/174	ETS300 256/257	IS 13872/13873
Call Transfer	ECMA 177/178	ETS300 260/261	IS 13865/13869
Path Replacement	ECMA 175/176	ETS300 258/259	IS 13863/13874
Call Completion to Busy Subscriber	ECMA 185/186	ETS300 365/366	IS 13866/13870
Call Completion on No Reply	ECMA 185/186	ETS300 365/366	IS 13866/13870
Call Offer	ECMA 191/192	ETS300 361/362	
Do Not Disturb/Override	ECMA 193/194	ETS300 363/364	
Call Intrusion	ECMA	ETS300	

	202/203	425/426	
Advice of Charge, Start of Call	ECMA 211/212		
Advice of Charge, During Call	ECMA 211/212		
Advice of Charge, End of Call	ECMA 211/212		
Recall	ECMA 213/214		
Call Interception	ECMA 220/221		
Common Information (ANF)			
Call Distribution to Attendants			
Message Waiting			
Conference			
CTM Incoming Call	ECMA 215		
CTM Location Registration	ECMA 216		

Nota 1 : O suporte de QSIG para este serviço suplementar está coberto no standard de chamada básica

5. Serviços QSIG e facilidades de rede adicionais

Os serviços suplementares e as facilidades de rede adicionais, actualmente suportadas pelo QSIG, são descritas seguidamente:

5.1 Advice of Charge

This service allows the served user to receive information concerning charges for a call. Three versions of the service provide information on:

1. charging rates at call establishment time and changes to charging rates during a call;
2. cumulative charge information automatically or on request during a call;
3. final charge information when a call is released.

This service is similar to the corresponding service offered in public ISDNs. In order to provide this service to the network user, the CTN can use the corresponding service in the public ISDN to obtain charging information for outgoing calls.

The QSIG network may provide to its users a different version of the service from that which the public ISDN provides to the QSIG network. Moreover, it may make adjustments to the charges, e.g. as is the practice in hotels.

5.2 Call Completion

This category provides two supplementary services:

Completion of Calls to Busy Subscribers (CCBS)

A calling user encountering a Busy destination can request that the call be automatically completed when the busy destination becomes free.

Completion of Calls on No Reply (CCNR)

The calling user, encountering a destination that remains unanswered can request that the call be automatically completed when the called destination is next used and becomes free again.

These services are also referred to as - Call Back When Free and Call Back When Next Used, respectively.

5.3 Call forwarding and diversion

Several types of "call diversion" services are supported and these can be either controlled or uncontrolled. The supported services in this category are:

- Call Forwarding Busy (**CFB**)
- Call Deflection (**CD**)
- Call Forwarding No Reply (**CFNR**)
- Call Forwarding Unconditional (**CFU**)

For call forwarding services, calls incoming to the served user are, subject to conditions, diverted to another destination as defined by the served user at the time of activating the service. The conditions are:

5.4 CFB

Only incoming calls encountering a busy served user are diverted.

5.5 CFNR

Incoming calls are diverted provided that the served user fails to answer the incoming call within a predefined period of time.

5.6 CFU

Unconditional. All incoming calls are diverted.

Activation, deactivation and interrogation of Call Forwarding services can be performed by the served user or by another authorized user, e.g. the user who is already the "divert-to" user may be able to deactivate forwarding or activate forwarding to a different "divert-to" user.

CD is a service permitting the served user, on arrival of an incoming call, to request that the QSIG network divert the call to another destination. The request can be generated automatically by the terminal immediately the call arrives or after remaining unanswered for a certain period of time, or the request can be generated as a result of user action on being alerted.

5.7 Call Interception

This additional network feature enables calls that cannot be completed due to certain conditions to be redirected to a pre-defined user known as the "intercepted-to user".

5.8 Call Intrusion (CI)

This service permits a calling user to request immediate connection to a busy destination. This may involve joining the calling user, in conference, to the existing call, or alternatively may cause the existing call to be placed on hold. The original call is restored on withdrawal of the served user.

5.9 Call Offer (CO)

This service permits a calling user to request that the call be offered to the user at a busy destination and that the called user be given the choice of accepting, rejecting or ignoring the waiting call.

5.10 Call Transfer (CT)

This supplementary service enables a user who has two calls of the same basic service to connect together as a new call between the other two users.

5.11 Call Waiting (CW)

This service permits the served user, whilst engaged in a call, to be notified of an incoming call and then to have the choice of accepting, rejecting or ignoring the waiting call.

5.12 Direct Dialling (DDI)

In reality this is a supplementary service of the public ISDN, however, the QSIG network can enter into arrangements with the public ISDN for DDI, so that incoming calls can be addressed directly to called users within the QSIG network. A DDI call from a public ISDN is progressed across the QSIG network and to the called user as a basic call.

5.13 Do Not Disturb (DND)

All incoming calls to the served user are rejected by the QSIG Network. The calling user is given an appropriate indication and at this point, provided that the calling user is served, the calling user can activate Do Not Disturb Override (**DNDO**) which causes the called user to be alerted.

Users can be awarded various levels of protection against override by DNDO and similarly, various levels of override capability can be awarded to users served by DNDO, allowing the override of different levels of protection.

5.14 Identification Services

There are several services that when activated can provide information regarding the identification of the users. The services provided are:

- Calling Line Identification Presentation (**CLIP**)
- Connected Line Identification Presentation (**COLP**)
- Calling/Connected Line Identification Restriction (**CLIR**)
- Calling Name Identification Presentation (**CNIP**)
- Connected Name Identification Presentation (**CONP**)
- Calling/Connected Name Identification Restriction (**CNIR**)

CLIP is a service offered to the called user and provides that user with the calling user's number and, if applicable, the calling user's subaddress.

COLP is a service offered to the calling user and provides that user with the connected user's number and, if applicable, the connected user's subaddress.

CLIR is a service which prevents the served user's number being presented to another user; i.e. it prevents CLIP/COLP from working. CLIR can be invoked to apply to all calls or on a per call basis. It can restrict the presentation of the served user's number not only during normal call establishment but also when the possibility of number presentation arises during the operation of other supplementary services, e.g. Call Forwarding and Call Transfer.

CNIP, CONP and CNIR work in the same manner as CLIP, COLP and CLIR respectively. The main difference is that CNIP and CONP provide the user's name rather than the user's number.

The line identification services CLIP, COLP and CLIR, work in harmony with the equivalent supplementary services of the public ISDN; e.g. for incoming calls from the public ISDN, the QSIG network will not receive the calling user's identification if the public ISDN's CLIR service has been invoked. For an outgoing call to a public ISDN, the QSIG network will not receive the connected user's identification if the public ISDN's COLR service has been invoked.

5.15 Mobile

A major benefit of QSIG is its integration with Cordless Terminal Mobility (CTM) and several "mobile" supplementary services and ANFs are supported by QSIG. These services, when the standards are finalized, will allow the cordless terminal user to move throughout the QSIG network, registering the terminal at nodes to make and receive calls.

5.16 Multiple Subscriber Number (MSN)

MSN is a supplementary service which permits more than one number (QSIG network number or public ISDN number) to be associated with a single QSIG network access.

5.17 Operator Services

The operator (or attendant) is a special type of user on the CTN and is differentiated from the ordinary user by the type of tasks the operator is intended to perform. A number of business improving services developed especially for operators will, when standards are finalized, be supported by QSIG. Such services include for example: serial call, call distribution to attendants, night service, call offer, message waiting and intrusion.

5.18 Path Replacement (PR)

This ANF permits an active call's connection through the QSIG network to be replaced by a new connection, e.g. to obtain a more efficient or cost effective connection.. For example, after call transfer any unnecessary "loops" can be eliminated.

5.19 Recall (RE)

This is a supplementary service that provides for the redirection of a call transferred by the served user back to the served user if the call is unanswered.

5.20 Subaddressing (SUB)

QSIG supports the transfer of a subaddress from the calling user to the called user during call establishment. This also applies to calls incoming from, or outgoing to a public ISDN.

5.21 User to User Signalling (UUS)

This supplementary service, when standardized, will allow a user to send/receive signalling information in conjunction with a call.

Three versions of the service permit user-to-user signalling:

1. in call control messages during call establishment;
2. while the called user is being alerted; and

3. during the active phase of the call.

6. Histórico do Documento

Versão	Data de Emissão	Direcção/Departamento Emissor	Observações
V1.0	Outubro 2001	DER/ERV	Primeira versão da especificação