

AS/NZS 14843:1999
ISO/IEC 14843:1996

AS/NZS 14843

Australian/New Zealand Standard™

**Information technology—
Telecommunications and
information exchange between
systems—Private integrated
services network—Inter-exchange
signalling protocol—Call offer
supplementary service**

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AS/NZS 14843:1999

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee IT/16, Private Telecommunications Networking. It was approved on behalf of the Council of Standards Australia on 6 November 1998 and on behalf of the Council of Standards New Zealand on 12 November 1998. It was published on 5 March 1999.

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Information technology— Telecommunications and information exchange between systems—Private integrated services network—Inter-exchange signalling protocol—Call offer supplementary service

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT/16, Private Telecommunications Networking.

This Standard is identical with, and has been reproduced from, ISO/IEC 14843:1996, *Information technology—Telecommunications and information exchange between systems—Private Integrated Services Network—Inter-exchange signalling protocol—Call offer supplementary service*.

The objective of this Standard is to provide private integrated services network (PISN) designers and users with the specification for signalling protocol for use at the Q reference point between PISN exchanges, in order to allow a call to be offered to a busy called user and to wait for the called user to accept the call worldwide.

The Standard is one of a series of emerging ISO/IEC Standards applicable to private integrated services networking. The series uses the ISDN concepts as developed by ITU-T and is also within the framework of Standards for Open Systems Interconnection (OSI) as defined by ISO/IEC JTC 1.

The number of this Standard is not reproduced on each page; its identity is shown only on the cover and title page.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

For the purpose of this Standard, the ISO/IEC text should be modified as follows:

- (a) The words ‘this Australian/New Zealand Standard’ should replace the words ‘this International Standard’ wherever they appear.
- (b) References to International Standards should be replaced by references, where appropriate, to the following Australian/New Zealand Standards:

<i>Reference to International Standard or other publication</i>	<i>Australian/New Zealand Standard</i>
ISO/IEC	AS/NZS
11572 Information technology— Telecommunications and information exchange between systems— Private Integrated Services Network— Circuit-mode bearer services— Inter-exchange signalling procedures and protocol	11572 Information technology— Telecommunications and information exchange between systems— Private integrated services network— Circuit-mode bearer services— Inter-exchange signalling procedures and protocol
11574 Information technology— Telecommunications and information exchange between systems— Private Integrated Services Network— Circuit-mode 64 kbit/s bearer services—Service description, functional capabilities and information flows	4135 Information technology— Telecommunications and information exchange between systems— Private integrated services network— Circuit-mode 64 kbit/s bearer services—Service description, functional capabilities and information flows
11579 Information technology— Telecommunication and information exchange between systems— Private Integrated Service Network	4136 Information technology— Telecommunications and information exchange between systems— Private integrated services network

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ISO/IEC	AS/NZS
11579-1 Part 1: Reference configuration for PISN Exchanges (PINX)	4136.1 Part 1: Reference configuration for PISN exchanges (PINX)
11582 Information technology— Telecommunications and information exchange between systems— Private Integrated Services Network— Generic functional protocol for the support of supplementary services— Inter-exchange signalling procedures and protocol	4239 Information technology— Telecommunications and information exchange between systems— Private integrated services network— Generic functional protocol for the support of supplementary services— Inter-exchange signalling procedures and protocol
13869 Information technology— Telecommunications and information exchange between systems— Private Integrated Services Network— Inter-exchange signalling protocol— Call transfer supplementary service	4339 Information technology— Telecommunications and information exchange between systems— Private integrated services network— Inter-exchange signalling protocol— Call transfer supplementary service
13873 Information technology— Telecommunications and information exchange between systems— Private Integrated Services Network— Inter-exchange signalling protocol— Call diversion supplementary services	4342 Information technology— Telecommunications and information exchange between systems— Private integrated services network— Inter-exchange signalling protocol— Call diversion supplementary services
14841 Information technology— Telecommunications and information exchange between systems— Private Integrated Services Network— Specification, functional model and information flows—Call offer supplementary service	14841 Information technology— Telecommunications and information exchange between systems— Private integrated services network— Specification, functional model and information flows—Call offer supplementary service
14844 Information technology— Telecommunications and information exchange between systems— Private Integrated Services Network— Inter-exchange signalling protocol— Do not disturb and do not disturb override supplementary services	14844 Information technology— Telecommunications and information exchange between systems— Private integrated services network— Inter-exchange signalling protocol— Do not disturb and do not disturb override supplementary services
14846 Information technology— Telecommunications and information exchange between systems— Private Integrated Services Network— Inter-exchange signalling protocol— Call intrusion supplementary service	14846 Information technology— Telecommunications and information exchange between systems— Private integrated services network— Inter-exchange signalling protocol— Call intrusion supplementary service
CCITT	
Rec. I.112 Vocabulary of terms for ISDNs (Blue Book)	—
Rec. I.210 Principles of telecommunication services supported by an ISDN and the means to describe them (Blue Book)	—

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CCITT	AS/NZS
Rec. Z.100 Specification and Description Language (Blue Book)	—
Rec. Q.950 Digital Subscriber Signalling Systems No. 1 (DSS1) supplementary services protocols; Structure and general principles	—

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AUSTRALIAN/NEW ZEALAND STANDARD

Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call offer supplementary service**1 Scope**

This International Standard specifies the signalling protocol for the support of the Call Offer supplementary service (SS-CO) at the Q reference point between Private Integrated Services Network Exchanges (PINXs) connected together within a Private Integrated Services Network (PISN).

SS-CO is a supplementary service which, on request from the calling user (or on that user's behalf), enables a call to be offered to a busy called user and to wait for that called user to accept this call.

The Q reference point is defined in ISO/IEC 11579-1.

Service specifications are produced in three stages and according to the method specified in CCITT Recommendation I.130. This International Standard contains the stage 3 specification for the Q reference point and satisfies the requirements identified by the stage 1 and stage 2 specifications in ISO/IEC 14841.

The signalling protocol for SS-CO operates on top of the signalling protocol for basic circuit switched call control, as specified in ISO/IEC 11572, and uses certain aspects of the generic procedures for the control of supplementary services specified in ISO/IEC 11582.

This International Standard also specifies additional signalling protocol requirements for the support of interactions at the Q reference point between SS-CO and other supplementary services and ANFs.

Note - Additional interactions that have no impact on the signalling protocol at the Q reference point can be found in the relevant stage 1 specifications.

This International Standard is applicable to PINXs which can interconnect to form a PISN.

2 Conformance

In order to conform to this International Standard, a PINX shall satisfy the requirements identified in the Protocol Implementation Conformance Statement (PICS) proforma in annex B.

3 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 11572:1996,	<i>Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Circuit-mode bearer services - Inter-exchange signalling procedures and protocol.</i>
ISO/IEC 11574:1994,	<i>Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Circuit-mode 64 kbit/s bearer services - Service description, functional capabilities and information flows.</i>
ISO/IEC 11579-1:1994,	<i>Information technology - Telecommunications and information exchange between systems - Private integrated services network - Part 1: Reference configuration for PISN Exchanges (PINX).</i>
ISO/IEC 11582:1995,	<i>Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Generic functional protocol for the support of supplementary services - Inter-exchange signalling procedures and protocol.</i>
ISO/IEC 13869:1995,	<i>Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call transfer supplementary service.</i>

- ISO/IEC 13873:1995, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call diversion supplementary services.*
- ISO/IEC 14841:1996, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Specification, functional model and information flows - Call offer supplementary service.*
- ISO/IEC 14844:1996, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Do not disturb and do not disturb override supplementary services.*
- ISO/IEC 14846:1996, *Information technology - Telecommunications and information exchange between systems - Private Integrated Services Network - Inter-exchange signalling protocol - Call intrusion supplementary service.*
- CCITT Rec. I.112:1988, *Vocabulary of terms for ISDNs (Blue Book).*
- CCITT Rec. I.210:1988, *Principles of telecommunication services supported by an ISDN and the means to describe them (Blue Book).*
- CCITT Rec. Z.100:1988, *Specification and Description Language (Blue Book).*
- CCITT Rec. Q.950:1994 *Digital Subscriber Signalling System No. 1 (DSS1) supplementary services protocols; Structure and general principles.*

4 Definitions

For the purposes of this International Standard, the following definitions apply.

4.1 External definitions

This International Standard uses the following terms defined in other documents:

- Application Protocol Data Unit (APDU) (ISO/IEC 11582)
- Basic Service (CCITT Rec. I.210)
- Call, Basic Call (ISO/IEC 11582)
- Coordination Function (ISO/IEC 11582)
- Diverted-to PINX (ISO/IEC 13873)
- Notification (ISO/IEC 11582)
- Originating PINX (ISO/IEC 11572)
- Private Integrated Services Network (PISN) (ISO/IEC 11579-1)
- Private Integrated Services Network Exchange (PINX) (ISO/IEC 11579-1)
- Rerouting PINX (ISO/IEC 13873)
- Served User (ISO/IEC 13873)
- Signalling (CCITT Rec. I.112)
- Supplementary Service (CCITT Rec. I.210)
- Supplementary Services Control Entity (ISO/IEC 11582)
- Terminating PINX (ISO/IEC 11572)
- Transit PINX (ISO/IEC 11572)
- User (ISO/IEC 11574)
- User A (ISO/IEC 13865)

- User B (ISO/IEC 13865)
- User C (ISO/IEC 13865)

4.2 Other definitions

inter-PINX link : The totality of a signalling channel and a number of user information channels at the Q reference point.

path retention : The retaining of the network connection between the Originating PINX and the Terminating PINX so that a supplementary service (such as SS-CO) can be invoked without establishing a new connection.

Served User PINX : The PINX serving the served user.

5 List of acronyms

ANF	Additional Network Feature
APDU	Application Protocol Data Unit
ASN.1	Abstract Syntax Notation no. 1
ISDN	Integrated Services Digital Network
NFE	Network Facility Extension
PICS	Protocol Implementation Conformance Statement
PINX	Private Integrated Services Network Exchange
PISN	Private Integrated Services Network
SDL	Specification and Description Language
SS-CO	Call Offer supplementary service

6 Signalling protocol for the support of SS-CO

6.1 SS-CO description

Call Offer (SS-CO) is a supplementary service which, on request from the calling user (or on that user's behalf), enables a call to be offered to a busy called user and to wait for that called user to accept this call.

SS-CO is applicable to all circuit mode basic services defined in ISO/IEC 11574.

6.2 SS-CO operational requirements

6.2.1 Requirements on an Originating PINX

Call establishment procedures for the outgoing side of an inter-PINX link and call release procedures, as specified in ISO/IEC 11572, shall apply.

Generic procedures for the call-related control of supplementary services, as specified in ISO/IEC 11582 for an End PINX, shall apply.

6.2.2 Requirements on a Terminating PINX

Call establishment procedures for the incoming side of an inter-PINX link and call release procedures, as specified in ISO/IEC 11572, shall apply.

Generic procedures for the call-related control of supplementary services, as specified in ISO/IEC 11582 for an End PINX, shall apply.

6.2.3 Requirements on a Transit PINX

Basic call procedures specified in ISO/IEC 11572 for a Transit PINX shall apply.

Generic procedures for the call-related control of supplementary services, as specified in ISO/IEC 11582 for a Transit PINX, shall apply.

For SS-CO the requirements are limited to the passing on of Facility information elements for which the destination, as indicated in the NFE, is not the Transit PINX.

6.3 SS-CO coding requirements

6.3.1 Operations

The operations defined in Abstract Syntax Notation number 1 (ASN.1) in table 1 shall apply.

Table 1 - Operations in support of SS-CO

Call-Offer-Operations	
{iso(1) standard(0) pss1-call-offer(14843) call-offer-operations (0) }	
DEFINITIONS EXPLICIT TAGS ::=	
BEGIN	
IMPORTS	OPERATION, ERROR FROM Remote-Operation-Notation {joint-iso-ccitt(2) remote-operations(4) notation(0)} Extension FROM Manufacturer-specific-service-extension-definition {iso(1) standard(0) pss1-generic-procedures(11582) msi-definition(0)} notAvailable, supplementaryServiceInteractionNotAllowed FROM General-Error-List {ccitt recommendation q 950 general-error-list (1)};
PathRetain	::= OPERATION ARGUMENT PathRetainArg -- this operation may be used by other supplementary services -- using other values of argument
ServiceAvailable	::= OPERATION ARGUMENT ServiceAvailableArg -- this operation may be used by other supplementary services -- using other values of argument
CallOfferRequest	::= OPERATION ARGUMENT DummyArg RESULT DummyRes ERRORS { notAvailable, notBusy, temporarilyUnavailable, supplementaryServiceInteractionNotAllowed, unspecified}
PathRetainArg	::= CHOICE {serviceList ServiceList, extendedServiceList SEQUENCE{ serviceList ServiceList, extension Extension } }

Table 1 - Operations in support of SS-CO (continued)

ServiceAvailableArg	::= CHOICE {serviceList ServiceList, extendedServiceList SEQUENCE{ serviceList ServiceList, extension Extension }
ServiceList	::= BIT STRING {callOffer(0)} (SIZE(1..32)) -- bits other than callOffer(0) are reserved for -- other supplementary services
DummyArg	::= CHOICE{ null NULL, extension [1] IMPLICIT Extension, sequenceOfExtn [2] IMPLICIT SEQUENCE OF Extension}
DummyRes	::= CHOICE{ null NULL, extension [1] IMPLICIT Extension, sequenceOfExtn [2] IMPLICIT SEQUENCE OF Extension}
CfbOverride	::= OPERATION ARGUMENT DummyArg -- used in the interaction with Call Forwarding Busy
callOfferRequest	CallOfferRequest ::= 34
pathRetain	PathRetain ::= 41
serviceAvailable	ServiceAvailable ::= 42
cfbOverride	CfbOverride ::= 49
notBusy	ERROR ::= 1009 -- used when an SS-CO request is received in -- a Terminating PINX and the called user is not busy
temporarilyUnavailable	ERROR ::= 1000 -- used when conditions for invocation of SS-CO -- are momentarily not met
Unspecified	::= ERROR PARAMETER Extension
unspecified	Unspecified ::= 1008
END	-- of Call-Offer-Operations

6.3.2 Notifications

The notification defined in Abstract Syntax Notation number 1 (ASN.1) in table 2 shall apply.

Table 2 - Notification in support of SS-CO

Call-Offer-Notifications			
		{iso(1) standard(0) pss1-call-offer(14843) call-intrusion-notifications(1)}	
DEFINITIONS EXPLICIT TAGS ::= BEGIN			
IMPORTS		NOTIFICATION FROM Notification-Data-Structure {iso(1) standard(0) pss1-generic-procedures(1 1582) notification-data-structure(7)};	
RemoteUserAlerting	::=	NOTIFICATION	
		ARGUMENT	NULL
remoteUserAlerting	RemoteUserAlerting	::= 2000	
END		--of Call-Offer-Notifications	

6.3.3 Information elements

6.3.3.1 Facility information element

APDUs of the operations defined in 6.3.1 shall be coded in the Facility information element in accordance with ISO/IEC 11582.

When conveying an APDU of operation callOfferRequest, the NFE shall be included.

When conveying the invoke APDU of operation callOfferRequest, the destinationEntity data element of the NFE shall contain value endPINX.

When conveying the invoke APDU of operation callOfferRequest, the Interpretation APDU shall be omitted.

Note - Additional requirements for the conveyance of APDUs of operations pathRetain and serviceAvailable are given in A.3.2 of annex A.

6.3.3.2 Notification indicator information element

The notification defined above shall be coded in the Notification indicator information element in accordance with ISO/IEC 11582.

6.3.3.3 Other information elements

Any other information elements (e.g. Cause, Progress indicator) shall be coded in accordance with the rules of ISO/IEC 11572.

6.3.4 Messages

The Facility information element and the Notification indicator information element shall be conveyed in the messages as specified in clause 10 of ISO/IEC 11582.

Messages used for call establishment and release shall be as specified in of ISO/IEC 11572.

6.4 SS-CO state definitions

6.4.1 States at the Originating PINX

The procedures for the Originating PINX are written in terms of the following conceptual states existing within the SS-CO functional entity in that PINX in association with a particular call.

6.4.1.1 State CO-Idle

SS-CO is not operating.