

# **NEAX 2000 IPS**

## **INTERNET PROTOCOL SERVER**

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### **ISDN/Q-SIG Features and Specifications**

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Printed in Japan

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DATE	SEPTEMBER, 2001			DATE	MARCH, 2002			DATE	FEBRUARY, 2003			DATE	NOVEMBER, 2003				
ISSUE 5				ISSUE 6				ISSUE 7				ISSUE 8					
DATE	OCTOBER, 2004			DATE	AUGUST, 2005			DATE	DECEMBER, 2005			DATE					
NEAX 2000 IPS																	
ISDN/Q-SIG Features and Specifications												Revision Sheet 1/1					
												ND-91638-004(E)					

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## Table of Features

ISDN FEATURE	NEAX 2000 IPS						
	3000	3100	3200 R6.2	3300	3400	3500	3600
ADVICE OF CHARGE - DISPLAY	-	-	-	X	→	E	→
ALTERNATE ROUTING FOR ISDN	X	→	→	→	→	→	→
CALLED PARTY RECOGNITION SERVICE (DIRECT-IN TERMINATION (DIT))	X	→	→	→	→	→	→
DID ADDRESSING	X	→	→	→	→	→	→
DID AND DOD ADDRESSING	X	→	→	→	→	→	→
EVENT BASED CCIS	X	→	→	→	→	→	→
ISDN TERMINAL	X	→	E	→	→	→	→
MALICIOUS CALL TRACE	-	-	-	-	-	X	E
OVERLAP SENDING	-	-	-	X	→	→	→
SID TO NETWORK-PRESENT	X	→	→	→	→	→	→
SID TO TERMINATING USER - DISPLAY	X	→	→	→	E	→	→
SUBADDRESS-PRESENT	X	→	→	→	→	→	→
<b>X = available</b> <b>- = not available</b> <b>→ = carried over to next level software</b> <b>E = enhanced</b>							

Q-SIG FEATURE	NEAX 2000 IPS						
	3000	3100	3200 R6.2	3300	3400	3500	3600
CALLING/CONNECTED LINE ID PRESENTATION (CLIP/COLP)/CALLING/CONNECTED NAME ID PRESENTATION (CNIP/CONP)	-	-	-	X	→	→	→
CCIS TANDEM CALL-CALLING PARTY NUMBER (CPN) DELIVERY TO ISDN & Q-SIG NETWORKS	-	-	-	X	→	→	→
OVERLAP RECEIVING - Q-SIG	-	-	-	-	X	→	E
OVERLAP SENDING - Q-SIG	-	-	-	-	X	→	E
Q-SIG CIRCUIT SWITCHED BASIC CALL - ETSI VERSION	X	→	→	E	→	→	→
<b>X = available</b> <b>- = not available</b> <b>→ = carried over to next level software</b> <b>E = enhanced or changed</b>							

# Business Feature List

Following business features are available through ISDN.

## ACCOUNT CODE

ACCOUNT CODE - ATTENDANT  
ACCOUNT CODE - D<sup>term</sup>

## ATTENDANT DELAY ANNOUNCEMENT

## AUTHORIZATION CODE

## AUTOMATED ATTENDANT

## AUTOMATIC CHANGE OF NIGHT SERVICE

## BROKER'S CALL

## CALL FORWARDING

CALL FORWARDING - ALL CALLS  
CALL FORWARDING - ALL CALLS - D<sup>term</sup>  
CALL FORWARDING - ALL CALLS - OUTSIDE  
CALL FORWARDING - BUSY LINE  
CALL FORWARDING - BUSY LINE - D<sup>term</sup>  
CALL FORWARDING - BUSY LINE - OUTSIDE  
CALL FORWARDING - DON'T ANSWER  
CALL FORWARDING - DON'T ANSWER - D<sup>term</sup>  
CALL FORWARDING - DON'T ANSWER - OUTSIDE  
MULTIPLE CALL FORWARDING - ALL CALLS  
MULTIPLE CALL FORWARDING - BUSY LINE  
MULTIPLE CALL FORWARDING - DON'T ANSWER  
SPLIT CALL FORWARDING - ALL CALLS  
SPLIT CALL FORWARDING - BUSY LINE  
SPLIT CALL FORWARDING - DON'T ANSWER  
CALL FORWARDING - OVERRIDE  
GROUP DIVERSION

## CALL HOLD

EXCLUSIVE HOLD - D<sup>term</sup>  
NON-EXCLUSIVE HOLD - D<sup>term</sup>

## CALL PARK

CALL PARK - D<sup>term</sup>  
CALL PARK - SYSTEM  
CALL PARK - TENANT  
CALL PICKUP - DIRECT

## CALL PICKUP

CALL PICKUP - DESIGNATED GROUP  
CALL PICKUP - GROUP  
CALL PICKUP - GROUP - D<sup>term</sup>

## CALL REDIRECT

## CALL WAITING ANSWER - D<sup>term</sup>

## CALLER ID DISPLAY

## CLASS OF SERVICE - INDIVIDUAL

## CONSECUTIVE SPEED CALLING

## CONSULTATION HOLD

## DELAYED RINGING

## DIRECT INWARD DIALING (DID)

## DIRECT-IN TERMINATION (DIT)

## DISTINCTIVE RINGING

## DO NOT DISTURB

## ELAPSED TIME DISPLAY - D<sup>term</sup>

## FORCED ACCOUNT CODE

## GROUP LISTENING - D<sup>term</sup>

## LAST NUMBER CALL

## LAST NUMBER CALL - ATTENDANT

## LAST NUMBER CALL - D<sup>term</sup>

## LEAST COST ROUTING

## MAINTENANCE ADMINISTRATION TERMINAL

FAULT MESSAGE  
PEG COUNT

## NIGHT SERVICE

DAY/NIGHT MODE CHANGE BY STATION DIALING  
NIGHT CONNECTION - FIXED  
NIGHT CONNECTION - FLEXIBLE

## TRUNK ANSWER FROM ANY STATION (TAS)

## OUTGOING TRUNK QUEUING

## OUTGOING TRUNK QUEUING - D<sup>term</sup>

## SAVE AND REPEAT - D<sup>term</sup>

## SPEED CALLING

SPEED CALLING OVERRIDE - SYSTEM  
SPEED CALLING - ONE TOUCH - D<sup>term</sup>  
SPEED CALLING - STATION  
SPEED CALLING - SYSTEM  
SPEED CALLING - SYSTEM - D<sup>term</sup>

## STACK DIAL

STACK DIAL - ATTENDANT  
STACK DIAL - D<sup>term</sup>

## STATION HUNTING

STATION HUNTING - CIRCULAR  
STATION HUNTING - TERMINAL  
STATION HUNTING - SECRETARIAL

## STATION MESSAGE DETAIL RECORDING (SM-DR)

## TENANT SERVICE

## THREE-WAY CALLING

## TOLL RESTRICTION

TOLL DENIAL/TOLL DIVERSION  
TOLL RESTRICTION - TOTAL DIGIT COUNT  
TOLL RESTRICTION - 3/6 DIGIT

## TRUNK TO TRUNK CONNECTION

## UNIFORM CALL DISTRIBUTION (UCD)

## VOICE MAIL INTEGRATION

## **Bearer Capability**

In the case of tandem connections between ISDN/Q-SIG/CCIS/ACIS (except "data call" on CCIS), IPS sends "3.1 kHz audio" as Information transfer capability of the Bearer Capability in the outgoing setup message.

At terminating IPS, received bearer capabilities are converted as shown below.

Speech, 3.1 kHz audio --> 3.1 kHz audio

# Introduction

## Terms in this document

### PBX System Name

Usually, PBX system is designated as “PBX” or “system”.

When we must distinguish between the PBX system, they are designated as follows:

2000 IPS : NEAX 2000 IPS

2400 IPX : NEAX 2400 IPX

This page is for your notes.

# ADVICE OF CHARGE - DISPLAY

## GENERAL DESCRIPTION

When an outgoing connection is made on the ISDN trunk, this feature provides the call originator with the charge information from the network. The information will be displayed on the calling D<sup>term</sup> LCD for six seconds after the station has been released, and be output to the SMDR port.

## OPERATING PROCEDURE

No manual operation is required.

## SERVICE CONDITIONS

### ■ General Conditions

1. This feature is available from Series 3300 software.
2. Advice of Charge (AOC) service is supported based on the following specifications.
  - ISDN AOC-E, which is based on the AOC supplementary service for ISDN (ETS 300 182, August 1993).
  - Display AOC-E, which uses the ISDN Display Information Element, as defined in ITU-T Q.931 to convey textual AOC information.
  - CEPT AOC-E, which uses the CEPT Charge Advice Information Element.
3. This feature supports only Advice of Charge at the end of the call (AOC-E). If Advice of Charge during the call (AOC-D) information is sent, the information is ignored.
4. The 4BRTA or the 30PRTA card is required.
5. Charge information control for each country is specified by the ISDN protocol type setting in system data programming.
6. The MP calculates the call charge according to the UT (charging unit) sent from the AP (BRT/PRT).

Call charge=UT x Unit rate

UT (charging unit): UT sent from AP

Unit rate: Rate specified by system data programming

## ADVICE OF CHARGE - DISPLAY (CONT'D)

7. The unit rate can be set to two places of decimals. When the unit rate has three or more decimal places, it is required to round up or truncate the number to two decimal places and set that value. The integral part of unit rate can be set to maximum two digits.
8. If AOC information is not sent due to the cause of network, call charge information is not displayed.
9. The call charge information is displayed on a D<sup>term</sup> in the following range.

0.01 - 655.35

**Note:** "655.35" is the maximum value, which the MP can calculate.

### ■ Conditions for ISDN AOC-E

The AOC-E Supplementary Service for ISDN, as specified in ETS 300 182 (1993), is used in the following countries. Two variants of ISDN AOC-E exist. One operation is used to convey charge information in currency (AOC-E, Currency) and the other operation is used to convey charge information in units (AOC-E, Unit). Both variants are in use.

- Austria (Unit)
- Belgium (Currency)
- Denmark (Currency)
- France (Unit)
- Germany (Unit)
- Greece (Unit) (**Series 3500 software enhancement**)

### ■ Conditions for Display AOC-E

The public ISDN uses the Q.931 Display Information Element to convey AOC information to the subscriber (PBX) in the following countries:

- Netherlands
- Switzerland
- Portugal (**Series 3500 software enhancement**)
- Luxemburg (**Series 3500 software enhancement**)
- U.A.E. (**Series 3500 software enhancement**)

### ■ Conditions for CEPT AOC-E

CEPT AOC-E based implementations are used in the following countries:

- Italy
- Spain (Telefonica) (**Series 3500 software enhancement**)
- Sweden (**Series 3500 software enhancement**)

# ALTERNATE ROUTING FOR ISDN

## GENERAL DESCRIPTION

This feature automatically routes outgoing ISDN call over alternate trunk route.

## STATION APPLICATION

Not applicable

## OPERATING PROCEDURE

No manual operation is required.

## SERVICE CONDITIONS

1. This feature is available when Reason Value of DISC / REL / REL\_COMP in response to call setup for an outgoing ISDN call is 34, which means no line or channel is available.
2. This alternate routing can be allowed or denied on a trunk route basis by system programming.
3. The alternate trunk route can be assigned by CM8A.

**Note:** *The alternate routing is not available for tandem calls.*

# **CALLING PARTY RECOGNITION SERVICE** **(DIRECT-IN TERMINATION (DIT))**

## **GENERAL DESCRIPTION**

This feature provides an incoming *Direct-In Termination* (DIT) call via an ISDN trunk to be connected to a predetermined station. This application can be used for a station or modem.

## **STATION APPLICATION**

All stations

## **OPERATING PROCEDURE**

No manual operation is required.

## **SERVICE CONDITIONS**

1. For incoming calls in a Primary Rate Interface trunk, this service feature should be used only when DID trunks are not desired.
2. Refer to the Business Features and Specifications manual for details on service conditions.

# **DID ADDRESSING**

## **GENERAL DESCRIPTION**

This feature allows incoming ISDN-PRI calls to terminate to stations, SMART CONSOLE, Automated Attendant, etc., based on the Called Party number. Direct Inward Dial trunks will be terminated to programmed destinations without Attendant assistance.

## **STATION APPLICATION**

Not applicable

## **OPERATING PROCEDURE**

No manual operation is required.

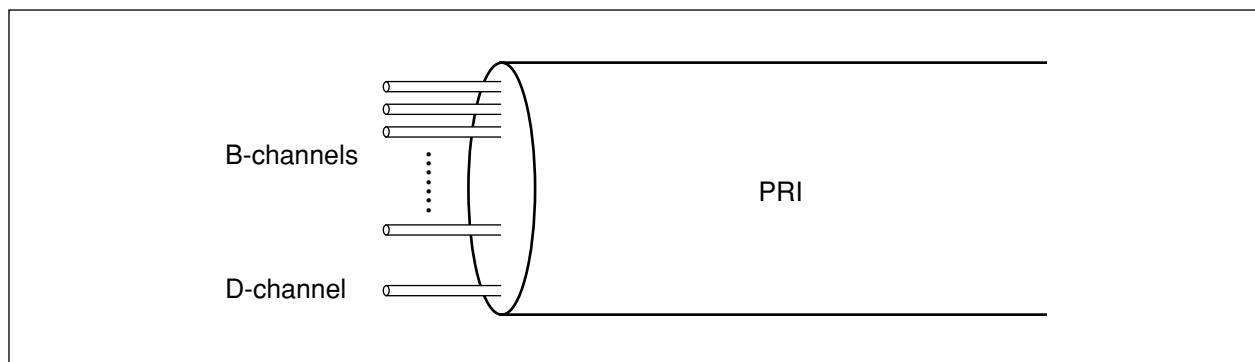
## **SERVICE CONDITIONS**

1. If the network is notified that the destination station for the DID call is busy or a connection-controlled station, the network gives the calling station a Busy Tone. (This depends upon call forwarding services being activated)
2. If the called station is nonexistent, the DID call can be routed to the SMART CONSOLE, to another designated station, or can receive Reorder Tone.
3. Refer to the Business Features and Specifications manual for more details on DID service.

# DID AND DOD ADDRESSING

## GENERAL DESCRIPTION

This feature allows the system to use DID and DOD on the same B channels. Trunk Provisioning Service Selection is not required. (B-channels can be used for DID and DOD without separating the trunk routes.)



## OPERATING PROCEDURE

No manual operation is required.

## SERVICE CONDITIONS

1. Confirm the DID and DOD selection with the customer's local exchange carrier prior to installation.
2. For more details, refer to "Direct Inward Dialing" and "Direct Outward Dialing" in the Business Features and Specifications.
3. The DID/DOD is supported without service provisioning, since no facility indication to the network is required.

# **EVENT BASED CCIS**

## **GENERAL DESCRIPTION**

This feature allows a PBX customer who does not provide a tie line (or when a customer cannot use the tie line because the line is busy or faulty), to use the various CCIS features. This feature uses the ISDN line as a CCIS virtual tie line. This feature is available between 2000 IPS and 2000 IPS, or 2000 IPS and 2400 IPX.

## **OPERATING PROCEDURE**

No manual operation is required.

## **SERVICE CONDITIONS**

1. Event Based CCIS is available between 2000 IPS and 2000 IPS, or 2000 IPS and 2400 IPX.
2. The maximum number of virtual tie lines is 16 channels per system. This includes the common signaling channels and voice channels.
3. The ISDN line used for the virtual tie line can also be used as a regular ISDN line.
4. This feature supports voice calls only. [Supported object at PBX transmission side: Single Line Telephone, D<sup>term</sup>, DID/E&M/Ring Down (analog/T1/E1) tandem calls.]  
The data calls are transmitted through the regular ISDN network.
5. The Peg Count (the number of originating call from the ISDN trunk) is counted when using the ISDN line for the virtual tie line by route basis.
6. Billing information of the virtual tie line using the ISDN line is treated as information for regular tie line calls.
7. Billing information of the virtual tie line using the ISDN line is treated on tandem calls.
8. The voice channel of the virtual tie line is released at a programmable time after the call finishes.
9. The Common Channel Handler (CCH) card is required for providing Event Based CCIS.
10. The availability of CCIS service features through Event Based CCIS is listed in the following table.

## EVENT BASED CCIS (CONT'D)

### Availability of CCIS Service Features for Event Based CCIS

X : Available  
 – : Not available

SERVICE FEATURE	AVAILABILITY	REMARKS
Attendant Camp-On with Tone Indication - CCIS	X	
Attendant Controlled Conference - CCIS	X	<b>Note 4</b>
Automatic Recall - CCIS	X	
Brokerage - Hot Line - CCIS	X	
Busy Lamp Field (BLF) - CCIS	–	
Busy Verification - CCIS	X	
Call Back - CCIS	X	
Call Forwarding - All Calls - CCIS	X	
Call Forwarding - Busy Line - CCIS	X	
Call Forwarding - Don't Answer - CCIS	X	
Call Forwarding - Intercept - CCIS	X	
Call Forwarding - Override - CCIS	X	
Call Processing Indication - CCIS	X	
Call Transfer - All Calls - CCIS	X	
Call Transfer - Attendant - CCIS	X	
Called Station Status Display - CCIS	X	
Calling Name Display - CCIS	X	
Calling Number Display - CCIS	X	
CCIS Networking via IP	–	
Centralized Billing - CCIS	X	<b>Note 2</b>
Centralized Day/Night Mode Change - CCIS	–	
Centralized MAT - CCIS	–	
Consultation Hold - All Calls - CCIS	X	
Data Line Security - CCIS	X	
Deluxe Traveling Class Mark - CCIS	X	
Dial Access to Attendant - CCIS	X	
Digital Display - Station - CCIS	X	
Digital Display - Trunk - CCIS	X	
Direct-In Termination - CCIS	X	
Distinctive Ringing - CCIS	X	
Do Not Disturb - CCIS	X	
Dual Hold - CCIS	X	
Elapsed Time Display - CCIS	X	
Flexible Numbering of Station - CCIS	X	
Hand-Free Answer Back - CCIS	X	
House Phone - CCIS	X	

## EVENT BASED CCIS (CONT'D)

### Availability of CCIS Service Features for Event Based CCIS (CONT'D)

X : Available  
– : Not available

SERVICE FEATURE	AVAILABILITY	REMARKS
Hot Line - CCIS	X	
Incoming Call Identification - CCIS	X	
Individual Attendant Access - CCIS	X	<b>Note 5</b>
LDN Night Connection - CCIS	X	
Link Alarm Display - CCIS	–	
Link Reconnect - CCIS	X	
Message Waiting Lamp Setting - Attendant - CCIS	X	<b>Note 3</b>
Message Waiting Lamp Setting - Station - CCIS	X	<b>Note 3</b>
Miscellaneous Trunk Access - CCIS	X	
Miscellaneous Trunk Restriction - CCIS	X	
Multiple Call Forwarding - All Calls - CCIS	X	
Multiple Call Forwarding - Busy Line - CCIS	X	
Multiple Call Forwarding - Don't Answer - CCIS	X	
Multiple Console Operation - CCIS	X	
Network Station Number - CCIS (FCCS)	X	
Night Connection Fixed - CCIS	X	
Night Connection Flexible - CCIS	X	
Outgoing Trunk Queuing - CCIS	–	
Paging Access - CCIS	X	
Restriction from Outgoing Calls - CCIS	X	
Service Display - CCIS	X	
Single-Digit Station Calling - CCIS	X	
Station-Controlled Conference - CCIS	X	<b>Note 4</b>
Station-to-Station Calling - CCIS	X	
Station-to-Station Calling Operator Assistance - CCIS	X	
Toll Restriction - 3/6 Digit - CCIS	X	
Trunk Answer from Any Station - CCIS	X	
Trunk-to-Trunk Restriction - CCIS	X	
Uniformed Numbering Plan - CCIS	X	
Voice Call - CCIS	X	
Voice Mail Integration - CCIS	X	
Voice Mail Private Password - CCIS	X	

**Note 1:** *The voice channel and the common signaling channel keep connecting after the calls finish, according to the release timer data. Therefore, while the CCIS link is kept by the timer, the features are available.*

**Note 2:** *The billing information is sent while the CCH link is active. If the sending of billing information fails, it is sent again when a new CCH link is established by the next call.*

**Note 3:** *As a remote office, this feature is available on 2000 IPS.*

**Note 4:** *An attendant/extension of the 2000 IPS cannot be a conference leader.*

**Note 5:** *This service is available when the Attendant Console is provided at 2400 IPX office on the network.*

## **EVENT BASED CCIS (CONT'D)**

11. When a call is made through Event Based CCIS, the ISDN subscriber number is sent to the called office to verify that an appropriate party makes the call. The ISDN subscriber number is kept in the PBX memory and checked when call is arrived. If the PBX receives an unknown number, the PBX sends disconnect signal to reject the incoming call.
  - a. This feature is available between 2000 IPS and 2000 IPS, or 2000 IPS and 2400 IPX.
  - b. The system data programming is needed for this feature.
  - c. As a calling number, the ISDN subscriber number is used, and it is assigned by system data programming.
  
12. At first, the CCIS control channel is established and confirmed the answer of called party. When the called party is answered, the voice channel is established. The voice channel is established after the confirmation of answer of called party. This incurs no call charge since the voice channel is not connected when the called party does not answer.
  - a. This feature is available only between 2000 IPS and 2000 IPS.
  - b. The system data programming is needed for this feature.
  - c. The call is charged for the CCIS control signal even if the called party does not answer.
  - d. When this feature is available, the ISDN line for Event Based-CCIS is disconnected at once under the following conditions;
    - When the caller abandons it during ringing
    - When the called station is busy
  - e. The information transfer capability of ISDN line for the CCIS voice channel has to be assigned as “speech”.
  
13. The information transfer capability of ISDN line for CCIS voice channel can be selected by system data programming. (Speech/3.1k Audio/Unrestricted digital information)
  - a. This feature is available between 2000 IPS and 2000 IPS, or 2000 IPS and 2400 IPX.
  - b. The system data programming is needed for this feature.
  - c. Only the CCIS voice channel can be changed. The signaling channel for CCIS is fixed as “Unrestricted digital information”.

# **ISDN TERMINAL**

## **GENERAL DESCRIPTION**

This feature provides the system with an ISDN Terminal or Terminal Adapter (TA). The following connections are available:

- ISDN Terminal to ISDN Terminal
- ISDN Terminal to ISDN Trunk
- ISDN Trunk to ISDN Terminal
- ISDN Terminal to Single Line Telephone
- ISDN Terminal to D<sup>term</sup>
- ISDN Terminal to PS

## **STATION APPLICATIONS**

ISDN Terminal, SLT (PB, DP), D<sup>term</sup>

## **OPERATING PROCEDURE**

No manual operation is required.

## **SERVICE CONDITIONS**

1. The ILC (ISDN Line Circuit) card and the ICH (ISDN Channel Handler) card are required.
2. The ISDN Terminal must be locally powered.
3. The following connections are available:
  - Point-to-Point connection
  - Point-to-Multipoint connection
  - Basic Access T0 / Primary Access T2
4. The following features are available:
  - Individual Terminal Calling (Point-to-Multipoint connection)
  - Group Calling (Point-to-Multipoint connection)

## ISDN TERMINAL (CONT'D)

- Called Party Recognition Service (DIT)
  - DID Addressing
  - DID and DOD Addressing
  - SID to Network Present
  - SID to Terminating User - Display
  - SubAddress - Present
  - Direct Outward Dialing (DOD)
  - Restriction from Outgoing Calls
  - Toll Restriction
  - Direct-in Termination
  - Station-to-Station
  - Station Hunting
  - Half/Full Duplex Switchover
5. The ISDN Terminal can provide voice and data communication via CCIS network. The CCIS network must be digital.
  6. During communication through the CCIS network, link reconnection is not available.
  7. Station service conditions are as follows:

### ■ Station Hunting

When an SLT/D<sup>term</sup> or an ISDN Terminal calls a busy SLT/D<sup>term</sup>, another SLT/D<sup>term</sup> in Station Hunting group is called.

When an SLT/D<sup>term</sup> or an ISDN Terminal calls an busy ISDN Terminal, another ISDN Terminal in Station Hunting group is called.

**Note:** *Both of an SLT/D<sup>term</sup> and an ISDN Terminal cannot be included in the same Station Hunting group.*

### ■ Call Forwarding

An ISDN Terminal cannot set Call Forwarding - All Calls, Busy Line, Don't Answer, and cannot be the destination of Call Forwarding.

When an ISDN Terminal is a calling station, it can be forwarded to another SLT/D<sup>term</sup> but cannot be forwarded to central office trunk or tie line trunk.

## ISDN TERMINAL (CONT'D)

### ■ Call Transfer

An SLT/D<sup>term</sup> cannot transfer a call in progress with an ISDN Terminal to another station.

In the same way, an ISDN Terminal cannot transfer a call in progress with an SLT/D<sup>term</sup> to another station.

During an SLT/D<sup>term</sup> converses with digital tie line trunk (both of ACIS and CCIS) and ISDN trunk, the SLT/D<sup>term</sup> cannot transfer the call to an ISDN Terminal.

### ■ Call Pickup, Call Pickup - Designated Group

An ISDN Terminal cannot be assigned to Call Pickup group and can not pickup a call to another station.

An SLT/D<sup>term</sup> cannot pickup a call to an ISDN Terminal.

### ■ Executive Right of Way

During voice communication between an SLT/D<sup>term</sup> and an ISDN Terminal, another SLT/D<sup>term</sup> can interrupt into only a SLT/D<sup>term</sup>. But during data communication with an ISDN Terminal, another SLT/D<sup>term</sup> cannot interrupt it.

### ■ Busy Service (Step Call, Call Back)

When an SLT/D<sup>term</sup> calls a busy ISDN Terminal, busy service such as Step Call and Call Back cannot be provided to the ISDN Terminal.

It is the same when an ISDN Terminal calls a busy SLT/D<sup>term</sup>.

8. When an SLT is calling an ISDN Terminal or an ISDN Terminal is busy, hooking service is not available. Therefore, at this time another services are not available.
9. A D<sup>term</sup> can call an ISDN Terminal via Myline or Subline. A D<sup>term</sup> can be called from ISDN Terminal via Myline or Subline.
10. When an SLT/D<sup>term</sup> calls an ISDN Terminal, it can send the calling station number to the ISDN Terminal. At this time, ISDN trunk number and local number are also attached to be sent.
11. Station-to-Station Calling between a smart console and an ISDN Terminal is not available.
12. In case of Point-to-Multipoint connection, an SLT/D<sup>term</sup> must dial ISDN Multipoint station number assigned by CM1B, which is not an ISDN Terminal number assigned by CM10.
13. When a D<sup>term</sup> calls an ISDN Terminal or an ISDN Terminal calls a D<sup>term</sup>, a calling station number is displayed to the calling D<sup>term</sup> or ISDN Terminal.  
In case of Point-to-Multipoint connection, the calling station number displayed is the ISDN station number assigned by CM10.
14. Station-to-Station Calling between a PS station and an ISDN Terminal is available.
15. Only Preset Dialing can be used from an ISDN Terminal. Overlap Dialing is not available.

## ISDN TERMINAL (CONT'D)

### 16. Group Call

This feature terminates a call to all ISDN Terminals or Terminal Adapters accommodated on the same bus. Group Call is available for following connections.

- ISDN trunk to ISDN Terminal
- ISDN Terminal to ISDN Terminal
- Single Line Telephone to ISDN Terminal (**Series 3200 R6.2 enhancement**)
- D<sup>term</sup> to ISDN Terminal (**Series 3200 R6.2 enhancement**)

# MALICIOUS CALL TRACE

## GENERAL DESCRIPTION

This feature allows a station and Attendant to send a Malicious Call Trace request to the network when a malicious call arrives via an ISDN trunk.

Malicious Call Trace (hereinafter called MCT) is a supplementary service is intended to be used by called parties to find anyone who has placed malicious calls (such as threatening calls and crank calls) on ISDN lines.

**Note:** *This feature is available in Australia only.*

## STATION APPLICATION

All stations

DESK CONSOLE

SMART CONSOLE

## OPERATING PROCEDURE

To set MCT from a Dterm or Attendant Console

1. When a malicious call terminates to a D<sup>term</sup> or Attendant Console, press the MCT feature key during communication. The MCT request message is sent to the network.
2. When this service is set, the LCD displays **MCT** for 6 seconds and the feature key lamp lights in red for 2 seconds.
3. When the result of MCT is received from the network, the LCD displays **MCT SET** or **MCT NG** for 6 seconds.

To set MCT from a Single Line Telephone

1. When a malicious call terminates to a Single Line Telephone, press the **FLASH** key (or momentarily press hook switch) and dial the MCT access code during communication. The MCT request message is sent to the network.

## MALICIOUS CALL TRACE (CONT'D)

### SERVICE CONDITIONS

1. MCT can be set only for incoming calls. It cannot be used when placing calls.
2. The MCT access code can be set on a D<sup>term</sup> and Single Line Telephone.
3. This feature is selectable by service restriction class and trunk route data.
4. MCT request is sent to the BRT/PRT trunk to resume communication between the station and trunk. After that, a message indicating the result of MCT (OK/NG) is received from the ISDN network.
5. If the terminal is a Single Line Telephone, the user cannot check the result because it has no display function.
6. If you go on-hook after sending an MCT request but before receiving the MCT result, a Disconnect REQ is sent to the network.
7. At the time of tandem termination from the ISDN to CCIS, MCT can be used by a terminating extension (D<sup>term</sup>, SLT) or an attendant console through CCIS. (**Series 3600 software enhancement**)

# OVERLAP SENDING

## GENERAL DESCRIPTION

Overlap Sending is available for an outgoing call from the 2000 IPS to ISDN network.

Overlap Sending is a procedure, used in call establishment of an outgoing call, to enable the user to send called party number digits to the network in successive messages.

## OPERATING PROCEDURE

No manual operation is required.

## SERVICE CONDITIONS

### ■ General Conditions

1. This feature conforms to following ETSI standard.  
  
ETS 300 102-1  
ETS 300 102-2  
ETS 300 403-1
2. This feature is available from Series 3300 software.
3. The 4BRTA or the 30PRTA card is required.
4. Overlap Sending can be selected every ISDN origination trunk route, but cannot be selected every called number.
5. When a called number exceeds the overlapped digits set by system data in ISDN call origination from an extension or trunk, the called number for overlapped digits is sent to ISDN network through the called number information element of SETUP message. Moreover, called number afterward is sent out through the called number information element of INFO message.
6. At the time of sending the last digit of called number, it is sent adding the sending complete information element on INFO message.
7. When a user stops dialing before sending the last digit of called number, the 2000 IPS sends INFO message including the sending complete information element after ORT timeout (15 seconds).
8. T304 timer (30 seconds, option) is not supported.

## OVERLAP SENDING (CONT'D)

9. Number development in call origination to ISDN is only available for call origination with LCR, not for call origination with trunk route.
10. Addition and deletion of number is available in system data programming (LCR number development).
11. When number deletion (deletion of area code) is set by system data (LCR number development), the number of digits of called number in SETUP message sent to ISDN from the 2000 IPS becomes 20 digits minus deleted digits. In this case, since the number of digits dialed by users differs from the number of digits sent to ISDN from the 2000 IPS, it is required to set the maximum number of digits by CM85 respectively.

### ■ **Conditions on call origination from an extension**

1. This feature is available from Single Line Telephone, D<sup>term</sup>, PS and Attendant Console, but not available from ISDN Terminal.

### ■ **Conditions on Tandem connection**

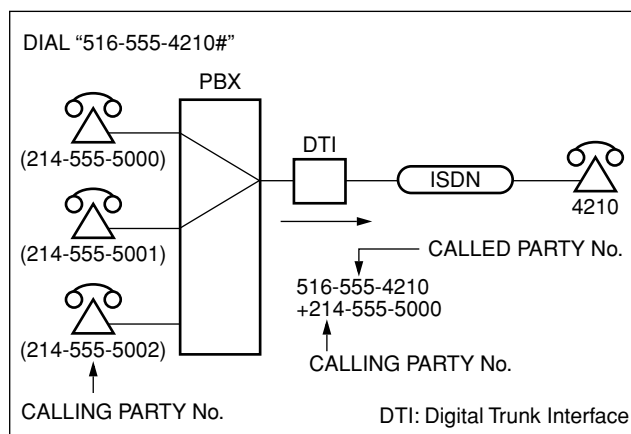
1. This feature is available for call origination from a trunk (ISDN, CCIS, ACIS).

# SID TO NETWORK - PRESENT

## GENERAL DESCRIPTION

This feature allows the ISDN network to be informed of the calling party's Station Identification number (SID) when a call originates from a terminal connected to the system.

For this example, the SID sent to the network may be 214-555-5000 for every station in the PBX, or each station may present a unique extension number (last 4 digits) to the ISDN network.



## OPERATING PROCEDURE

No manual operation is required. The calling station number is sent to the ISDN network automatically.

## SERVICE CONDITIONS

1. The data provided as the calling station number is assigned via MAT/CAT for each ISDN circuit or station. In addition, if no data has been assigned as the calling station number, the system will not provide any information to the network.
2. A maximum of 16 digits can be assigned as the calling station number.
3. The maximum number of area codes and office code patterns is 15.
4. Transmission of SID to the ISDN network can be programmed by the Class of Service. Programming is required for each station.
5. The delivery of SID information is subject to local regulations.

# SID TO TERMINATING USER - DISPLAY

## GENERAL DESCRIPTION

This feature provides a visual display of the originating station's number and subaddress information on a D<sup>term</sup> for incoming ISDN calls. This provides the terminal user with a quick and accurate way to identify the originating station's number (Calling Number).

## OPERATING PROCEDURE

No manual operation is required. The originating station number is automatically displayed on the D<sup>term</sup>.

## SERVICE CONDITIONS

1. This feature is available on the D<sup>term</sup> with Display.
2. A maximum of 16 digits forming the originating party's number, including the PBX access code, can be displayed. For subaddress, a maximum of 8 digits can be displayed. If the subaddress exceeds 8 digits, the first 8 are displayed. Below is an example of the display when the originating party's number is 214-555-5000, and the subaddress is 82623667:

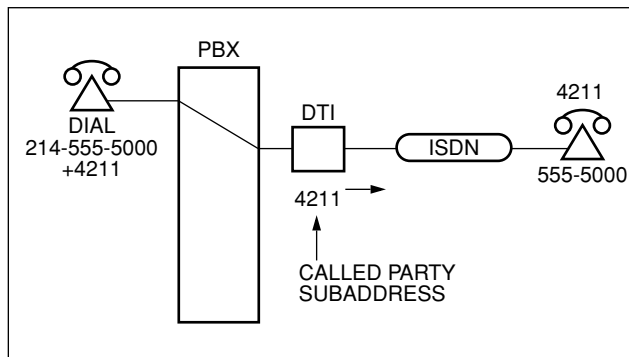
(Elapsed time)	8 2 6 2 3 6 6 7	subaddress
	2 1 4 5 5 5 5 0 0 0	calling party number

3. The SID is flashing while the D<sup>term</sup> is ringing on its Prime Line. The duration of display after the call is answered can be selected by system data programming (display for 6 seconds or continuously). (**Series 3400 software enhancement**)
4. If the ISDN network provides Name Display Service, the calling party name can be displayed in place of SID. (A maximum of 16 characters)
5. If the ISDN network does not provide Name Display Service and the SID/calling party name is registered to Speed Calling - Station, the calling party name can be displayed in place of SID.

# SUBADDRESS - PRESENT

## GENERAL DESCRIPTION

This feature allows a primary rate interface ISDN trunk to transfer the called party subaddress information to a destination ISDN station when the call is originated by the system. Dialing the called party station number and subaddress is required.



## OPERATING PROCEDURE

The calling station dials the ISDN subscriber number (including access code) followed by an asterisk (\*), then dials the called party subaddress followed by a pound sign (#). ISDN automatically recognizes the subaddress and transfers the information to the destination party.

## SERVICE CONDITIONS

1. If the calling party fails to dial the called party subaddress, ISDN cannot transfer any called party subaddress information to the destination party.
2. If a calling party does not wish to provide a called party subaddress, the call must dial # (Immediate Start). If a # is not dialed, a Timing Start operation begins. The Timing Start uses the interdigit time-out operation.
3. Subaddress dialing is available only on those telephone terminals that can generate push-button (DTMF) signals.
4. The called party subaddress must not exceed 8 digits.
5. The called party subaddress can be sent with trunk direct dial access.
6. This feature cannot be used when a call is originated to ISDN using Speed Calling or Call Forwarding features.

# CALLING/CONNECTED LINE ID PRESENTATION (CLIP/COLP)/ CALLING/CONNECTED NAME ID PRESENTATION (CNIP/CONP)

## GENERAL DESCRIPTION

In between Q-SIG networks, this feature allows calling or called party information, to be displayed on the D<sup>term</sup> LCD. CLIP/COLP conforms to ETS 300 173 and IS-11572 network. CNIP/CONP conforms to ETS 300 238 and IS-11572 network.

- Calling Line Identification Presentation (CLIP): Calling party number (ID) is displayed on the called party's D<sup>term</sup> LCD.
- Connected Line ID Presentation (COLP): Called party number (ID) is displayed on the calling party's D<sup>term</sup> LCD.
- Calling Name Identification Presentation (CNIP): Calling party information (Name ID) is displayed on the called party's D<sup>term</sup> LCD.
- Connected Name Identification Presentation (CONP): Called party information (Name ID) is displayed on the calling party's D<sup>term</sup> LCD.

This feature is also available when interworking with a CCIS interface.

## OPERATING PROCEDURE

No manual operation is required.

## SERVICE CONDITIONS

1. Name ID service is not available when:

- a tandem office is not provided with this feature or Calling Name Display - CCIS.
- a call is routed through a signaling interface other than Q-SIG or CCIS.

**Note:** *Available with IS-11572 interface.*

2. The routes to the offices not provided with this feature must be separated from the routes to the offices provided with this feature.
3. While hearing Ring Back Tone, Name ID of the called party is displayed on the calling party's D<sup>term</sup> LCD. Note that the display is not changed even if the call is transferred using such features as Call Forwarding - All Calls.
4. When a call is transferred to another office using a forwarding feature such as Call Forwarding - All Calls - Outside, Name ID of the terminated station is displayed on the calling party's D<sup>term</sup> LCD.

**CALLING/CONNECTED LINE ID PRESENTATION (CLIP/COLP)/  
CALLING/CONNECTED NAME ID PRESENTATION (CNIP/CONP) (CONT'D)**

5. Even if the called party is in busy or lockout state, the called party's Name ID is displayed on the calling party's D<sup>term</sup> LCD. However, when the called party is in Do Not Disturb state, Name ID is not displayed.
6. When a call is transferred using Consultation Hold and Voice Call, Name ID of the calling party is not displayed on the transferred party's D<sup>term</sup> LCD.
7. This service cannot be used in conjunction with the ISDN Information Transfer service.
8. The transfer rate is 64 kbps. Bearer Capabilities are as follows:
  - Speech
  - 3.1 kHz audio
9. When Name ID is not assigned, the calling or called party number is displayed.
10. Maximum 16 digits of calling or called party number/name is displayed as shown in the table below. After six seconds of answering, the display returns to Clock/Calendar display.

NUMBER OF RECEIVED DIGITS	CALLING PARTY'S ID/NAME ID DISPLAY	CALLED PARTY'S ID/NAME ID DISPLAY
1 - 8 digits	Top line: Elapsed time + Calling party number (Right 8 digits) Middle line: Calling party name (Right 8 digits)	Top line: Elapsed time + Connected/called/busy party number (Right 8 digits) Middle line: Connected/called/busy party name (Right 8 digits)
9 - 16 digits	Top line: Elapsed time (Right 8 digits: Blank) Middle line: Calling party number or name (Right 16 digits) <b>Note</b>	Top line: Elapsed time (Right 8 digits: Blank) Middle line: Connected/called/busy party number or name (Right 16 digits) <b>Note</b>

**Note:** *Either calling party number display or name display should be selected in system programming.*

11. When originating a call to a Q-SIG line using a D<sup>term</sup> sub line, Name ID of the D<sup>term</sup> sub line is sent to the called party.
12. CONP is available only for Prime Line of the calling party.
13. The characters displayed by this service are English alphabets, numerals and symbols conforming to ISO-8859-1.

## CALLING/CONNECTED LINE ID PRESENTATION (CLIP/COLP)/ CALLING/CONNECTED NAME ID PRESENTATION (CNIP/CONP) (CONT'D)

14. This service is available only for the D<sup>term</sup> equipped with LCD.
15. This service supports Calling/Connected Name Identification Restriction (CNIR) conforming to ETS 300 238.
16. This service supports Calling/Connected Line Identification Restriction (CLIR) conforming to ETS 300 173.
- 17. This feature is available from Series 3300 software.**

### INTERACTIONS

Name ID is available for the following features:

- Call Forwarding - All Calls - CCIS
- Call Forwarding - Busy Line - CCIS
- Call Forwarding - Don't Answer - CCIS
- Call Pickup
- Recalling of Call Hold
- Answering of Call Park
- Call Waiting
- Termination from UCD Queuing
- Outgoing Trunk Queuing

# **CCIS TANDEM CALL-CALLING PARTY NUMBER (CPN) DELIVERY TO ISDN & Q-SIG NETWORKS**

## **GENERAL DESCRIPTION**

This feature is provided for the call from tie line (CCIS line or Q-SIG) or a station, is sent to the public ISDN network (AT&T, NT) or Q-sig network.

## **OPERATING PROCEDURE**

No manual operation is required.

## **SERVICE CONDITIONS**

1. This feature programmed by system data is effective when:
  - Calls are originated from CCIS/Q-SIG line to AT&T, NT or Q-sig network.
  - Calls are originated from the station to AT&T, NT or Q-sig network.
  - Calls are originated from the attendant console which is assigned the individual attendant identification number to AT&T, NT or Q-sig network.
2. This feature is not effective when calls are originated from AT&T, NT network to AT&T, NT network.
3. This feature is not available for the call originated using OAI/ACD feature.
4. **This feature is available from Series 3300 software.**

# OVERLAP RECEIVING - Q-SIG

## GENERAL DESCRIPTION

Overlap Receiving is available for an incoming call to the 2000 IPS from Q-SIG network.

Overlap Receiving is a procedure, used in call establishment of an incoming call, to enable the network to send called party number digits to the user in successive messages, as and when they are made available from the remote network.

## OPERATING PROCEDURE

No manual operation is required.

## SERVICE CONDITIONS

### ■ General Conditions

1. This feature conforms to following ETSI standard.  
ETS 300 172
2. **This feature is available from Series 3400 software.**
3. The 24PRTA or the 30PRTA card is required.
4. After ORT timer/T302 timer (14-16 seconds) is out, the 2000 IPS connects or disconnects a call according to the system data programming. When the maximum number of digits has been received, the call is connected. When the received digits do not reach the maximum digits or exceed the maximum digits, the number is treated as an unallocated number.

**Note:** *ORT timer is variable (default: 6 seconds), and should be set to 14-16 seconds for T302 timer in system data programming.*

5. Connectable bearer services are Speech/3.1KHz audio. Unrestricted digital is not connectable.
6. Maximum digit number received from Q-SIG network must be set in system data programming (CM85).
7. When the received digits from Q-SIG network exceed the maximum digit number set by CM85, the 2000 IPS connects or disconnects a call according to the system data programming (CM08).
8. When the sending complete information element is received in SETUP message or INFO message, the 2000 IPS connects the call at that time even the received digits do not reach the maximum digit number set by CM85.

## **OVERLAP RECEIVING - Q-SIG (CONT'D)**

9. When the sending complete information element is not received in SETUP message or INFO message, the 2000 IPS connects the call at the time when the maximum digit number set by CM85 is received.
10. The maximum number of receiving digits in SETUP or INFO message is 24 digits.

### **■ Conditions on Call termination to extension**

Same conditions as Q-SIG en-bloc receiving are applied.

Single Line Station, D<sup>term</sup>, PS, Attendant Console, and ISDN Terminal can be a destination station.

### **■ Conditions on Tandem connection**

Same conditions as Q-SIG en-bloc receiving are applied.

1. When a destination station has set Call Forwarding - All Calls/Busy Line/Don't Answer, tandem connection is available.
2. Without routing through a destination station, direct tandem connection is available with LCR number development.
3. Types of outgoing trunks are ISDN, CCIS, and ACIS.
4. When the outgoing trunk is ISDN or CCIS, the 2000 IPS sends SETUP or IAI message after all digits of number are received. When the outgoing trunk is ACIS, the 2000 IPS seizes a trunk and sends the received digits after all digits of number are received.
5. Tandem connection from Q-SIG to a CCIS trunk route is not available, but LCR from Q-SIG to CCIS is available.
6. Tandem connection from Q-SIG to an ISDN trunk route is available with a maximum of 8 digits of number conversion including access code. LCR from Q-SIG to ISDN is also available.
7. Tandem connection from Q-SIG to an ACIS trunk route, and LCR from Q-SIG to ACIS are available.

### **■ Conditions for Russia specifications only**

1. **Overlap Receiving is available for Russia specifications from Series 3600 software.**
2. Same conditions are applied for Russia except below conditions.
3. When an extension or a trunk in 2000 IPS makes a call to Q-SIG network, dial tone sending is available from a tandem IPS office or a called IPS office. After receiving following INFO message, dial tone is stopped.

## OVERLAP RECEIVING - Q-SIG (CONT'D)

4. The 2000 IPS can receive SETUP message which does not include the called party information element. In this case, the called party number is received by INFO message.
5. The called IPS office sends SETUP ACK message (including Progress Description No. 01, 02, 03, 04, 08 in Progress Indicator information element) and the calling party can hear dial tone which is sent by the called IPS office.
6. In the case of three IPS configuration, when the tandem IPS office receives SETUP message which includes office number of tandem office, the tandem IPS office does not relay SETUP message which includes office number of the tandem IPS office.

### INTERACTIONS

Same conditions as Q-SIG en-bloc receiving are applied.

Call Forwarding - All Calls/Busy Line/Don't Answer can be set to the destination station. The forward destination can be a station and a trunk (ISDN, CCIS, ACIS).

# OVERLAP SENDING - Q-SIG

## GENERAL DESCRIPTION

Overlap Sending is available for an outgoing call from the 2000 IPS to Q-SIG network.

Overlap Sending is a procedure, used in call establishment of an outgoing call, to enable the user to send called party number digits to the network in successive messages.

## OPERATING PROCEDURE

No manual operation is required.

## SERVICE CONDITIONS

### ■ General Conditions

1. This feature conforms to following ETSI standard.  
ETS 300 172
2. **This feature is available from Series 3400 software.**
3. The 24PRTA or the 30PRTA card is required.
4. Overlap Sending can be selected every Q-SIG origination trunk route, but cannot be selected every called number.
5. When a called number exceeds the overlapped digits set by system data in Q-SIG call origination from an extension or trunk, the called number for overlapped digits is sent to Q-SIG network through the called number information element of SETUP message. Moreover, called number afterward is sent out through the called number information element of INFO message.
6. At the time of sending the last digit of called number, it is sent adding the sending complete information element on INFO message.
7. When a user stops dialing before sending the last digit of called number, the 2000 IPS sends INFO message including the sending complete information element after ORT timeout (15 seconds).
8. T304 timer is common to ORT timer (15 seconds fixed).
9. Number development in call origination to Q-SIG is only available for call origination with LCR, not for call origination with trunk route.
10. Addition and deletion of number is available in system data programming (LCR number development).

## OVERLAP SENDING - Q-SIG (CONT'D)

11. If the own office trunk is idle and the distant office is busy when a call is originated with Overlap Sending, the originating office cannot route the call to another route.
12. Route advance is available.
13. The maximum number of sending digits in SETUP or INFO message is 24 digits.
14. Voice call is supported, but data call is not supported.

### ■ **Conditions on call origination from an extension**

1. This feature is available from Single Line Telephone, D<sup>term</sup>, PS and Attendant Console, but not available from ISDN Terminal.

### ■ **Conditions on Tandem connection**

1. This feature is available for call origination from a trunk (ISDN, CCIS, ACIS).
2. The maximum number of digits of called number is 24 digits at tandem connection.

### ■ **Conditions for Russia specifications only**

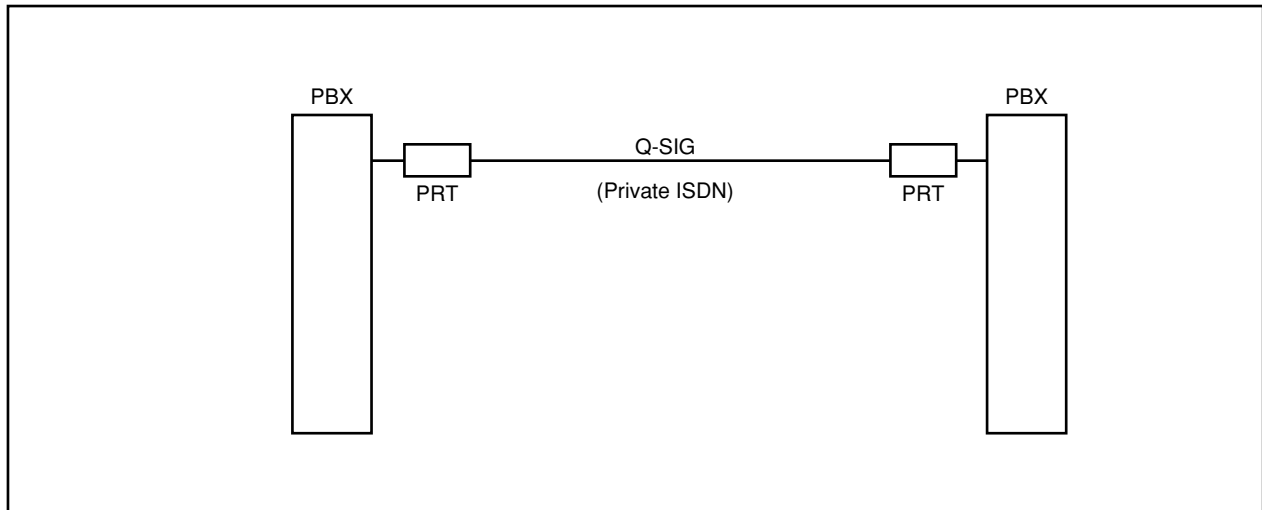
1. **Overlap Receiving is available for Russia specifications from Series 3600 software.**
2. Same conditions are applied for Russia except below conditions.
3. When an extension or a trunk in 2000 IPS makes a call to Q-SIG network, dial tone sending is available from a tandem IPS office or a called IPS office.
4. In the case of tandem connection from Q-SIG to Q-SIG, overlap sending is available before receiving all digits.
5. When an extension or a trunk in 2000 IPS makes a call to Q-SIG network, a call is made by SETUP message without the called party information element. In this case, the called party number is sent by INFO message later.
6. After a calling party receives SETUP ACK message (including Progress Description No. 01, 02, 03, 04, 08 in Progress Indicator information element), dial tone can be heard from the called IPS office.
7. In the case of two or three IPS configuration, when the calling party dials digits and following another digit, dial tone from the called IPS office or tandem IPS office is stopped.

# Q-SIG CIRCUIT SWITCHED BASIC CALL - ETSI VERSION

## GENERAL DESCRIPTION

This feature enables NEC's PBX to connect to NEC's PBX or other manufacturer by using Layer 3 protocol for the signaling for the support of circuit mode bearer services at the Q reference point.

Q-SIG conforms to ETS 300 172.



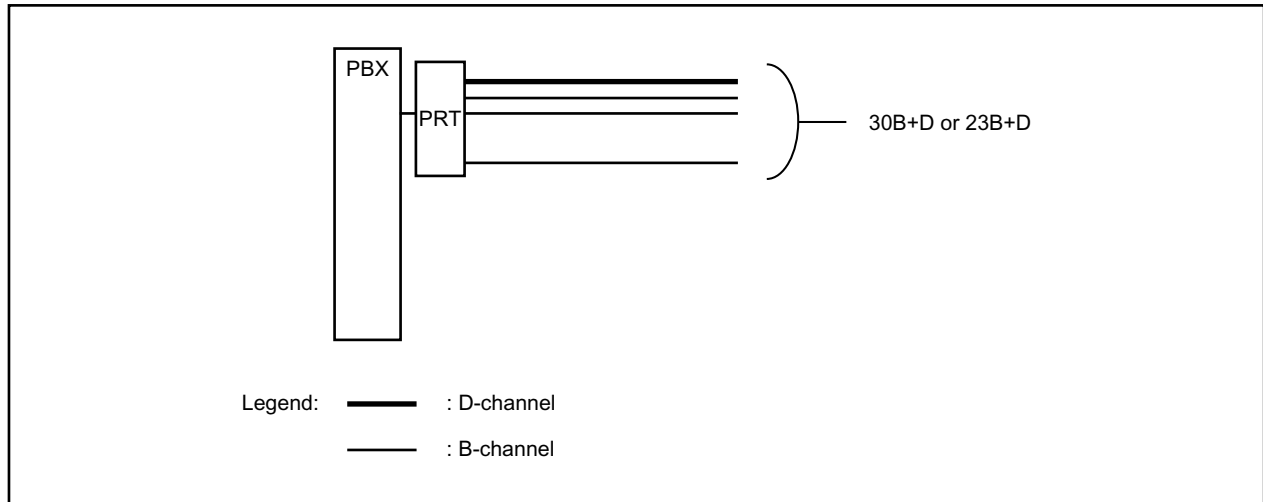
**Note:** ETS 300 172= Private Telecommunication Network (PTN);  
Inter-exchange signaling protocol  
Circuit mode basic service

# Q-SIG CIRCUIT SWITCHED BASIC CALL - ETSI VERSION (CONT'D)

## 1. Physical Interface

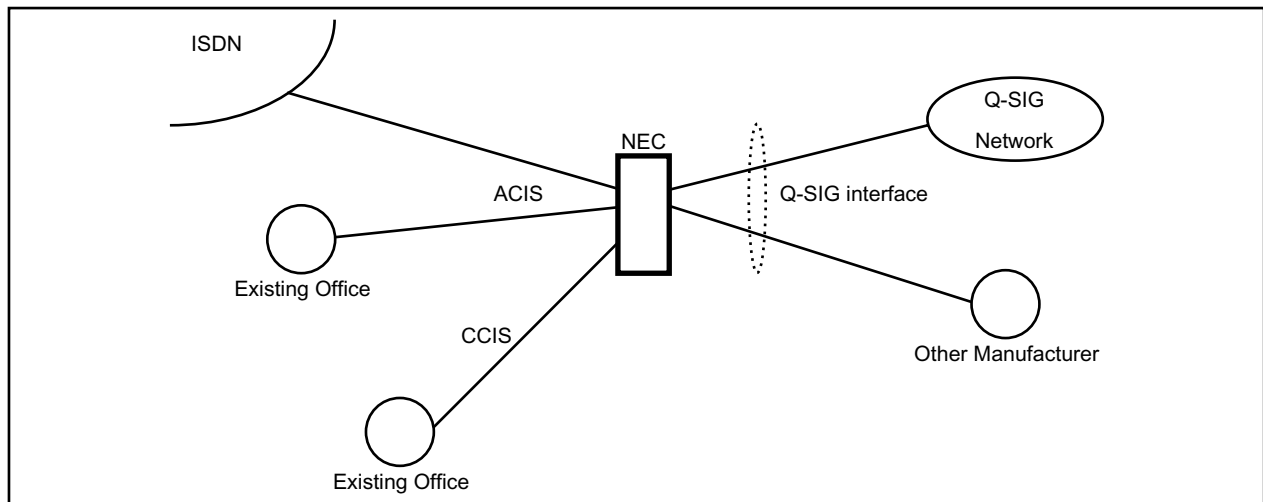
The physical interface is a 2Mbps or 1.5Mbps digital interface.

Maximum 30 B-channels or 23 B-channels are to be controlled by a single Data Link channel.



## 2. Interworking with Other Network

Q-SIG is available to the following connection and interworking with the other network.



## Q-SIG CIRCUIT SWITCHED BASIC CALL - ETSI VERSION (CONT'D)

### 3. Transparency

TYPE OF CALL	MANDATORY INFORMATION ELEMENTS	NON-MANDATORY INFORMATION ELEMENTS
Q-SIG $\rightleftarrows$ Q - SIG	Conforming to ETS 300 172	Conforming to ETS 300 172
ISDN $\rightleftarrows$ Q-SIG	(1) Message Type (2) Called Party Number <b>Note 1 Note 2</b>	Calling Party Number
CCIS $\rightleftarrows$ Q-SIG <b>Note 3</b>	Called Party Number	Calling Party Number
ACIS $\rightleftarrows$ Q-SIG	Called Party Number	None

**Note 1:** *When there is no called party number from ISDN, PBX defines the called party number.*

**Note 2:** *In the connection from Q-SIG to ISDN, PBX adds or deletes digits of the called party number.*

**Note 3:** *CCIS in this section means CCIS without ISDN transmitting information.*

### OPERATING PROCEDURE

No manual operation is required.

### SERVICE CONDITIONS

1. Redundancy structure
  - a. One D channel can control maximum 30 or 23 B-channels.
  - b. Control using the nB + D interface is available.
2. The multi-rate bearer service is not available.
3. The User-to-User Signaling (UUS) is not available.

### INTERACTIONS

The following services can be provided in conjunction with this feature:

## Q-SIG CIRCUIT SWITCHED BASIC CALL - ETSI VERSION (CONT'D)

- a. Common station/voice service
  - Call Forwarding - All Calls **Note 1**
  - Call Forwarding - Busy Line **Note 1**
  - Call Forwarding - Don't Answer **Note 1**
  - Caller ID Display **Note 1**
  - Direct-In Termination **Note 1**
  - Call Transfer - All Calls **Note 1**
  - Hot Line **Note 1**
  - Do Not Disturb **Note 1**
  - Calling Number Display
- b. Attendant Console service
  - Speed Calling - System **Note 2**
  - Call Queuing
- c. Network features
  - Trunk-to-Trunk Connection
  - Brokerage - Hot Line
  - Least Cost Routing - 3/6 Digit
  - Tie Lines

**Note 1:** *Service not based on the specification of Q-SIG supplementary service.*

**Note 2:** *Service provided with some limitations.*