



# Dialogic® SS7 Protocols

## IS41 Programmer's Manual

February 2009

U17SSS

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## Revision History

Issue	Date	Part Number	Description
1	08-Feb-99		Initial release.
2	14-Jun-99		Changes to reflect new message ids. Addition of a table of messages.
3	16-Jul-03		Branding changed: references to System7 removed.
4	04-May-04		Added new WIN operations and parameters for prepaid functionality. Documented Transparency feature. Added Selective tracing feature. Corrected minor errors and typos.
5	07-Dec-05		Added ellipsis in all operations.
6	31-May-07		Added support for IMSI (International Mobile Station Identity) in SMS Delivery Backward, SMS Delivery Forward, SMS Delivery Point-to-Point, SMS Notification and SMS Request operations
7	06-Feb-09		Dialogic branding; new formatting, US-spelling Added Network Context support Added long message support Added Service Request operation

**Note:** The current version of this guide can be found at:  
<http://www.dialogic.com/support/helpweb/signaling>

# 1 Introduction

The IS41 module is a portable software implementation of the ANSI/TIA/EIA-41.5-D Cellular Radiotelecommunications Intersystem Operations specification. It also supports the Wireless Intelligent Networking (WIN) extensions covered in the following specifications ANSI/TIA/EIA-751, ANSI/TIA/EIA-764, ANSI/TIA/EIA-771, and ANSI/TIA/EIA-826.

It implements a "Service Provider" interface to the IS41 network for user applications. This provides a primitive interface for control of dialogs to remote systems and the invocation of operations at those systems. The IS41 module interface to the user application is similar to the "MAP Provider block" specified in GSM ETS 300-599 Phase 2.

The IS41 module uses the services provided by the underlying Transaction Capabilities (TCAP) service for the transfer of operations between peer systems.

The IS41 module provides services to user applications while remaining independent of both the TCAP layer and the user application.

This Programmer's Manual is intended for users who choose to develop their own applications that will interface to and make use of the functionality provided by the IS41 module.

The IS41 module is an event driven task that uses standard structured message types for communication with other layers of the protocol stack. These messages are used to convey the protocol primitives between the IS41 module and the application and between the IS41 module and TCAP. Each message contains the primitives and parameters defined in the appropriate ITU or ANSI recommendations.

This manual provides an overview of the internal operation of the IS41 module and defines the structure of all messages used to interface to the IS41 module.

## 1.1 Abbreviations

ANSI	American National Standards Institute.
APDU	Application Protocol Data Unit.
CCITT	The International Telegraph & Telephone Consultative Committee.
ITU-T	International Telecommunication Union (formerly CCITT).
MAP	Mobile Application Part.
MTP	Message Transfer Part.
NC	Network Context.
SCCP	Signaling Connection Control Part.
TCAP	Transaction Capabilities Application Part.

## 1.2 Related Documentation

- [1] ANSI/TIA/EIA-41.5-D - Cellular Radiotelecommunications Intersystem Operations
- [2] ANSI/TIA/EIA-751 – Modifications to IS41D to support IMSI
- [3] ANSI/TIA/EIA-764 – Wireless Calling Name Feature Description
- [4] ANSI/TIA/EIA-771 – Wireless Intelligent Network
- [5] ANSI/TIA/EIA-826 - Cellular Wireless Intelligent Network Capabilities for Pre-Paid Charging
- [6] ANSI/T1.114 - Signalling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP)
- [7] ETSI ETS 300 599 - Mobile Application Part (MAP) Specification (GSM 09.02)
- [8] 3GPP2 N.S0011-0 – OTASP and OTAPA
- [9] U06SSS - Dialogic® SS7 Protocols TCAP Programmer's Manual.
- [10] U10SSS - Dialogic® Distributed Signaling Interface Components - Software Environment Programmer's Manual.

## 1.3 Feature Overview

Key features of the IS41 module include:

- Primitive interface providing full control of dialogs to remote systems.
- Full dialog management and error handling
- Primitive interface providing
  - Full access to Short Message Service operations.
  - Access to some WIN operations related to prepaid functionality.
- Transparency, allowing user applications to send and parse themselves any operation, such as operations that are not yet supported by the IS41 module.
- Full operation invocation management and error handling.
- Message oriented interface.

## 2 General Description

### 2.1 Module Overview

The IS41 module is a partial implementation of the ANSI/TIA/EIA-41.5-D, ANSI/TIA/EIA-771.5 and ANSI/TIA/EIA-826.5 specification signaling protocols. The IS41 module provides full control of dialogs with peer IS41 systems. The IS41 module currently supports full access to the Short Message Service operations and associated parameters. It also supports access to some specific WIN operations and associated parameters, related to the prepaid functionality. Operations that are not currently supported by the IS41 module can be accessed by means of the transparency feature (see section 2.8: [Transparency Feature](#)).

The ANSI/TIA/EIA-41.6-D, ANSI/TIA/EIA-771.6, and ANSI/TIA/EIA-826.6 specification signaling procedures are the responsibility of the user application.

Whenever the user application wishes to invoke an operation at a remote peer, a dialog must be opened with the peer. The required operations are invoked via this dialog. Results or errors sent by the remote system are also received via this dialog. Generally, the remote system will close the dialog at this point; however, certain scenarios specified in IS41 permit the dialog to be kept open for subsequent operation invocations. The IS41 module provides the user application with full control of the dialogs via a dialog primitive interface. Full access to operation invocation and result parameters is provided via a service primitive interface.

The module is event driven. It has a single input queue into which events from other modules (TCAP, user application, management etc.) are written. The module processes each event in turn until the input queue is empty in which case it will do nothing until the next event is received. Output from the module is directed depending on the type of event to the TCAP module, the user application module, the management module or the maintenance module.

In addition, the module requires a periodic timer tick notification be issued to it via the input queue. Typically, this is required every tenth of a second. This can either be generated by a timer module or using the services of the selected operating system.

### 2.2 Module Configuration

The module provides maximum flexibility by allowing a large number of user configuration options to be set up at run time. This allows the users to customize the operation of the module to suit the requirements of the final application. The configuration parameters are sent to the module's input event queue in the same manner as IS41 protocol messages.

The first message sent to the module must be the global configuration message. Any messages received prior to the global configuration message will be discarded. The global configuration message specifies the module ID for all modules to which the IS41 module issues messages. It also supplies values for the maximum number of dialogs (incoming and outgoing), base values for the incoming and outgoing ranges of dialog IDs and the maximum number of simultaneously active operation invocations that are required. The module checks that the values requested are compatible with the internal dimensions it has been built with.

The IS41 module must also be sent a timer configuration message. The time for which the IS41 module will wait for a user application response may be supplied as a message parameter. The message may also be sent without parameters in order to use a default value.

## 2.3 Dialog ID Assignment

The IS41 module may support a number of active dialogs at a time. User application primitives are associated with a particular dialog using a dialog ID.

The dialog ID is assigned when the opening primitive is exchanged between the user application and the IS41 module. For a dialog initiated by the user application (an "outgoing dialog"), the value is selected by the user application. For a dialog initiated by a remote system (an "incoming dialog"), the value is selected by the IS41 module. Once a dialog has started, user primitives that refer to this dialog must include its dialog ID value.

The dialog ID is a 16-bit value. Separate ranges of values must be used for outgoing and incoming dialogs. The global configuration message sent to the module on initialization specifies the range of IDs available to IS41 for incoming dialogs; as well as the range of IDs available to the IS41 user for outgoing dialogs.

The dialog ID is of purely local significance between the user application and the IS41 module.

Maximum values for the number of incoming and outgoing dialogs that the IS41 can support are set up at configuration time. These values are then fixed for both TCAP and user application interfaces.

The dialog ID selected by the user application for an outgoing dialog must lie within the configured range of outgoing dialog IDs. Dialog IDs for incoming dialogs are allocated automatically by the IS41 module from its configured range of incoming dialog IDs. The incoming dialog ID that has been unused for the longest period is used next. It is important that the IS41 module and the user application use separate ranges of IDs so that it is not possible for the user application to select an ID for an outgoing dialog at the same instant that IS41 selects the same ID for use with an incoming dialog.

Dialog ID values also exist on the IS41 to TCAP interface. The user application is not concerned with these. However, both the IS41 module and the TCAP module must be configured to use separate ranges of dialog IDs for incoming and outgoing dialogs. The dialog IDs used on this interface are of entirely local significance to IS41 and TCAP.

## 2.4 Application Context

The ANSI/TIA/EIA specifications do not specify the use of application context for identifying TCAP dialogs.

## 2.5 Invoke ID

When the user application has established a dialog with a peer, it may invoke an operation at a remote peer by sending a service request primitive to the IS41 module. Subsequent responses from the peer will be indicated to the user in a service confirmation primitive.

Operation invocations from the remote peer are indicated to the user application in service indication primitives. Any response the user wishes to send in reply should be issued in a service response primitive.

An "invoke ID" must be present in a service request or indication primitive. This invoke ID serves to identify a particular invocation of IS41 operation.

Service response and confirmation primitives are associated with a particular invocation of an IS41 operation using this invoke ID.

The invoke ID must be unique for each service request on a dialog. The invoke ID is transported transparently by the IS41 module. The user application is responsible for ensuring unambiguous use of the invoke ID with the remote system.

## 2.6 Constant Definitions

A "C" language header file (is41\_inc.h) is available containing the definitions and constants necessary to interface with the IS41 module. This file contains definitions for the mnemonics listed in this Programmer's Manual.

## 2.7 Module Dimensions

Internally, there are a number of data structures used by the module.

The maximum dimensions of these structures are determined by compile time constants. The two constants of importance to the user are:

- a) The maximum number of simultaneous dialogs supported by the module.
- b) The maximum number of simultaneous invocations supported by the module.

## 2.8 Transparency Feature

The transparency feature allows user applications to send and parse themselves any operation, such as operations that are not yet supported by the IS41 module. The list of operations that must be transparently passed through by the IS41 module can be specified by means of the new Transparency Configuration request (see section 6.4: [IS41 Transparency Configuration Request](#)). Transparent operations are handled using four service primitives: IS41ST\_TRANSP\_SRV\_REQ, IS41ST\_TRANSP\_SRV\_RSP, IS41ST\_TRANSP\_SRV\_IND and IS41ST\_TRANSP\_SRV\_CNF (see sections 5.8.1 and 5.9.1 for specific details on these transparency primitives.)

## 2.9 Long Message Support

The module IS41 can support the generation and reception of long TCPPN\_COMPONENT messages (towards and from the TCAP). This is typically used to support SCCP Segmentation and Reassembly procedures together with the SCCP and TCAP modules.

To enable correct operation, the IS41F\_SEGMENTATION flag of the option field of IS41\_MSG\_CONFIG message must be set and the GCT environment must be set up to handle long messages.

No individual IS41 parameters are currently supported to have a size greater than 255 therefore the IS41 module does not generate code-shifts toward the application as of the most current release.

## 3 Interface to System Services

### 3.1 System Functions

In addition to the primitive interface and the management interface to the TCAP module (which are described in later sections), the module requires a few basic system services to be supplied by the underlying operating system.

The following functions are required for inter-task communication:

<b>GCT_send</b>	Sends a message to another task.
<b>GCT_receive</b>	Accept next message from input event queue, blocking the task if no message is ready.
<b>GCT_grab</b>	As receive but not blocking if no message is ready.

The following functions are required for allocation of inter-task messages:

<b>getm()</b>	Allocate a message from the system.
<b>reIm()</b>	Release block of memory to partition.

These functions are described in the Dialogic® Distributed Signaling Interface Components - Software Environment Programmer's Manual.

### 3.2 Timer Operation

The IS41 module requires a periodic tick timer message "TIM\_EXP" to drive its internal timer mechanism.

This message should be sent to the IS41 modules input queue at a period that may be selected at compile time. A default period of 100 ms is normally used.

The format of this message is given in Appendix A: [Tick Timer message format](#).

## 4 Interface to TCAP

The IS41 module is usually used in conjunction with the TCAP module. However, the use of primitives in accordance with Q.771 provides that it can also be integrated with other Transaction Capabilities implementations if required.

The IS41 module communicates with the TCAP using the following primitives, all of which are defined in CCITT Recommendation Q.771:

### 4.1 Dialog handling:

UNI-REQ	UNI-IND
QUERY-REQ	QUERY-IND
CONVERSATION-REQ	CONVERSATION -IND
RESPONSE-REQ	RESPONSE -IND
U-ABORT-REQ	U-ABORT-IND
	P-ABORT-IND
	NOTICE-IND

The message format used to convey these primitives is defined in the Dialogic® SS7 Protocols TCAP Programmer's Manual. The following messages are used:

TCP_MSG_DLG_REQ	Messages issued by IS41
TCP_MSG_DLG_IND	Messages issued to IS41

### 4.2 Component handling:

	NULL-IND
INVOKE-REQ	INVOKE-IND
RESULT-L-REQ	RESULT-L-IND
RESULT-NL-REQ	RESULT-NL-IND
U-ERROR-REQ	U-ERROR-IND
U-CANCEL-REQ	L-CANCEL-IND
U-REJECT-REQ	L-REJECT-IND
	R-REJECT-IND
	U-REJECT-IND

The message format used to convey these primitives is defined in the Dialogic® SS7 Protocols TCAP Programmer's Manual. The following messages are used:

TCP_MSG_CPT_REQ	Messages issued by IS41
TCP_MSG_CPT_IND	Messages issued to IS41

## 5 Interface to User Application

### 5.1 Introduction

Primitives exchanged between the user application and the IS41 module are passed by inter-process messages.

The following messages are used:

<b>IS41-DIALOGUE-REQ</b>	Transfers dialog request primitives and dialog response primitives from user application to IS41.
<b>IS41-DIALOGUE-IND</b>	Transfers dialog indication primitives and dialog confirmation primitives from IS41 to user application.
<b>IS41-SERVICE-REQ</b>	Transfers service request primitives and service response primitives from user application to IS41.
<b>IS41-SERVICE-IND</b>	Transfers service indication primitives and service confirmation primitives from IS41 to user application.

The basic structure of each message (irrespective of the IS41 primitive contained within it) is the same and is described in Appendix A of the Dialogic® Distributed Signaling Interface Components - Software Environment Programmer's Manual.

The message must be contained in a single buffer, which should be allocated by the sending module (using the **getm** function) and either released (using the **relm** function) or passed to another module by the receiving module. The **getm** and **relm** functions are described in Section 3.1, [System Functions](#).

The message header contains a "type", the value of this parameter indicating the primitive that is being conveyed by the message. The following message types have been defined:

Primitive	Message type	Value
IS41-SERVICE-REQ	IS41_MSG_SRV_REQ	0xc7b0
IS41-SERVICE-IND	IS41_MSG_SRV_IND	0x87b1
IS41-DIALOGUE-REQ	IS41_MSG_DLG_REQ	0xc7b2
IS41-DIALOGUE-IND	IS41_MSG_DLG_IND	0x87b3

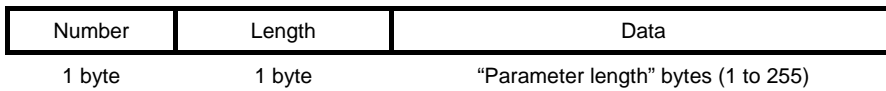
### 5.2 Primitive Parameters

Each user application primitive includes a number of parameters. These parameters are conveyed in the parameter area of the message that conveys the primitive.

The first byte in the parameter area is the primitive type octet and the last byte is a zero byte to indicate that there are no further parameters in the parameter area. Any parameters associated with the message are placed between the message type code and the final (zero) byte. Therefore the parameter area is formatted as follows:



The parameters may be placed in any order. The first byte of a parameter is the parameter name, the second byte is the length of the parameter data to follow (excluding the parameter name and the length byte itself), and this is followed by the parameter data. The encoding of the parameter data aligns exactly with the parameter format specified in the appropriate ANSI recommendation whenever possible. Therefore, each parameter is formatted as follows:



Within each message there are mandatory parameters which must always be present and optional parameters which may or may not be present.

### 5.3 Dialog Primitive Types

Dialog handling primitives allow the user application to establish and control dialogs with remote systems.

Dialog primitives sent by the user application to the IS41 module. These convey a dialog request or response:

Primitive	Mnemonic	Value (dec)	Value (hex)
IS41-OPEN-REQ	IS41DT_OPEN_REQ	1	0x01
IS41-CLOSE-REQ	IS41DT_CLOSE_REQ	2	0x02
IS41-DELIMITER-REQ	IS41DT_DELIMITER_REQ	3	0x03
IS41-U-ABORT-REQ	IS41DT_U_ABORT_REQ	4	0x04
IS41-UNI-REQ	IS41DT_UNI_REQ	7	0x07
IS41-OPEN-RSP	IS41DT_OPEN_RSP	129	0x81

Dialog primitives sent by the IS41 module to the user application. These convey a dialog indication, or confirmation:

Primitive	Mnemonic	Value (dec)	Value (hex)
IS41-OPEN-IND	IS41DT_OPEN_IND	1	0x01
IS41-CLOSE-IND	IS41DT_CLOSE_IND	2	0x02
IS41-DELIMITER-IND	IS41DT_DELIMITER_IND	3	0x03
IS41-U-ABORT-IND	IS41DT_U_ABORT_IND	4	0x04
IS41-OPEN-CNF	IS41DT_OPEN_CNF	129	0x81
IS41-P-ABORT-IND	IS41DT_P_ABORT_IND	5	0x05
IS41-NOTICE-IND	IS41DT_NOTICE_IND	6	0x06
IS41-UNI-IND	IS41DT_UNI_IND	7	0x07

The following sections define the message format and content of the parameter area for each of the messages exchanged between the user application and the IS41 module.

## 5.4 Service Primitive Types

Once a dialog is established between two IS41 peers, they may invoke operations of each other.

The user application invokes an operation using a service request primitive.

The user application responds to an operation invoked at the user application by a remote IS41 system using a service response primitive.

The following table details service request and response primitives sent by the user application to the IS41 module.

**Table 1. Service request and response primitives**

Primitive	Mnemonic	Value (dec)	Value (hex)
IS41-SMS-DELIVERY-BACKWARD-REQ	IS41ST_SMS_DB_REQ	1	0x01
IS41-SMS-DELIVERY-BACKWARD-RSP	IS41ST_SMS_DB_RSP	129	0x81
IS41-SMS-DELIVERY-FORWARD-REQ	IS41ST_SMS_DF_REQ	2	0x02
IS41-SMS-DELIVERY-FORWARD-RSP	IS41ST_SMS_DF_RSP	130	0x82
IS41-SMS-DELIVERY-POINT-TO-POINT-REQ	IS41ST_SMS_DPTP_REQ	3	0x03
IS41-SMS-DELIVERY-POINT-TO-POINT-RSP	IS41ST_SMS_DPTP_RSP	131	0x83
IS41-SMS-NOTIFICATION-REQ	IS41ST_SMS_N_REQ	4	0x04
IS41-SMS-NOTIFICATION-RSP	IS41ST_SMS_N_RSP	132	0x84
IS41-SMS-REQUEST-REQ	IS41ST_SMS_R_REQ	5	0x05
IS41-SMS-REQUEST-RSP	IS41ST_SMS_R_RSP	133	0x85
IS41-ORIGINATION-REQUEST-REQ	IS41ST_ORREQ_REQ	6	0x06

IS41-ORIGINATION-REQUEST-RSP	IS41ST_ORREQ_RSP	134	0x86
IS41-ANALYZED-INFORMATION-REQ	IS41ST_ANALYZD_REQ	7	0x7
IS41-ANALYZED-INFORMATION-RSP	IS41ST_ANALYZD_RSP	135	0x87
IS41-CONNECT-RESOURCE-REQ	IS41ST_CONNRES_REQ	8	0x8
IS41-CONNECT-RESOURCE-RSP	IS41ST_CONNRES_RSP	136	0x88
IS41-CONNECTION-FAILURE_REPORT-REQ	IS41ST_CONNFAILRPT_REQ	9	0x9
IS41-CONNECTION-FAILURE_REPORT-RSP	IS41ST_CONNFAILRPT_RSP	137	0x89
IS41-DISCONNECT-RESOURCE-REQ	IS41ST_DISCONNRES_REQ	10	0xa
IS41-DISCONNECT-RESOURCE-RSP	IS41ST_DISCONNRES_RSP	138	0x8a
IS41-CALL-CONTROL-DIRECTIVE-REQ	IS41ST_CC DIR_REQ	11	0xb
IS41-CALL-CONTROL-DIRECTIVE-RSP	IS41ST_CC DIR_RSP	139	0x8b
IS41-TBUSY-REQ	IS41ST_TBUSY_REQ	12	0xc
IS41-TBUSY-RSP	IS41ST_TBUSY_RSP	140	0x8c
IS41-TNOANSWER-REQ	IS41ST_TNOANS_REQ	13	0xd
IS41-TNOANSWER-RSP	IS41ST_TNOANS_RSP	141	0x8d
IS41-BULK-DISCONNECT-REQ	IS41ST_BULKDISCONN_REQ	14	0xe
IS41-BULK_DISCONNECT-RSP	IS41ST_BULKDISCONN_RSP	142	0x8e
IS41-OANSWER-REQ	IS41ST_OANSWER_REQ	15	0xf
IS41-ODISCONNECT-REQ	IS41ST_ODISCONNECT_REQ	16	0x10
IS41-ODISCONNECT-RSP	IS41ST_ODISCONNECT_RSP	144	0x90
IS41-TANSWER-REQ	IS41ST_TANSWER_REQ	17	0x11
IS41-TDISCONNECT-REQ	IS41ST_TDISCONNECT_REQ	18	0x12
IS41-TDISCONNECT-RSP	IS41ST_TDISCONNECT_RSP	146	0x92
TRANSPARENCY-REQ	IS41ST_TRANSP_SRV_REQ	19	0x13
TRANSPARENCY-RSP	IS41ST_TRANSP_SRV_RSP	147	0x93
IS41-SERVICE-REQUEST-REQ	IS41ST_SERVICEREQ_REQ	20	0x14
IS41-SERVICE-REQUEST-RSP	IS41ST_SERVICEREQ_RSP	148	0x94

The user application receives operation invocations in a service indication primitive.

The user application receives the results or any errors from invoking an operation at a remote IS41 system in a service confirmation primitive.

The following table details service indication and confirmation primitives sent by the IS41 module to the user application.

**Table 2. Service indication and confirmation primitives**

Primitive	Mnemonic	Value (dec)	Value (hex)
IS41-SMS-DELIVERY-BACKWARD-IND	IS41ST_SMS_DB_IND	1	0x01
IS41-SMS-DELIVERY-BACKWARD-CNF	IS41ST_SMS_DB_CNF	129	0x81
IS41-SMS-DELIVERY-FORWARD-IND	IS41ST_SMS_DF_IND	2	0x02
IS41-SMS-DELIVERY-FORWARD-CNF	IS41ST_SMS_DF_CNF	130	0x82
IS41-SMS-DELIVERY-POINT-TO-POINT-IND	IS41ST_SMS_DPTP_IND	3	0x03
IS41-SMS-DELIVERY-POINT-TO-POINT-CNF	IS41ST_SMS_DPTP_CNF	131	0x83
IS41-SMS-NOTIFICATION-IND	IS41ST_SMS_N_IND	4	0x04
IS41-SMS-NOTIFICATION-CNF	IS41ST_SMS_N_CNF	132	0x84
IS41-SMS-REQUEST-IND	IS41ST_SMS_R_IND	5	0x05
IS41-SMS-REQUEST-CNF	IS41ST_SMS_R_CNF	133	0x85
IS41-ORIGINATION-REQUEST-IND	IS41ST_ORREQ_IND	6	0x06
IS41-ORIGINATION-REQUEST-CNF	IS41ST_ORREQ_CNF	134	0x86
IS41-ANALYZED-INFORMATION-IND	IS41ST_ANALYZD_IND	7	0x07
IS41-ANALYZED-INFORMATION-CNF	IS41ST_ANALYZD_CNF	135	0x87
IS41-CONNECT-RESOURCE-IND	IS41ST_CONNRES_IND	8	0x08
IS41-CONNECT-RESOURCE-CNF	IS41ST_CONNRES_CNF	136	0x88
IS41-CONNECTION-FAILURE_REPORT-IND	IS41ST_CONNFILRPT_IND	9	0x09
IS41-CONNECTION-FAILURE_REPORT-CNF	IS41ST_CONNFILRPT_CNF	137	0x89
IS41-DISCONNECT-RESOURCE-IND	IS41ST_DISCONNRES_IND	10	0xa
IS41-DISCONNECT-RESOURCE-CNF	IS41ST_DISCONNRES_CNF	138	0x8a
IS41-CALL-CONTROL-DIRECTIVE-IND	IS41ST_CCDIR_IND	11	0xb
IS41-CALL-CONTROL-DIRECTIVE-CNF	IS41ST_CCDIR_CNF	139	0x8b
IS41-TBUSY-IND	IS41ST_TBUSY_IND	12	0xc
IS41-TBUSY-CNF	IS41ST_TBUSY_CNF	140	0x8c
IS41-TNOANSWER-IND	IS41ST_TNOANS_IND	13	0xd
IS41-TNOANSWER-CNF	IS41ST_TNOANS_CNF	141	0x8d
IS41-BULK-DISCONNECT-IND	IS41ST_BULKDISCONN_IND	14	0xe
IS41-BULK_DISCONNECT-CNF	IS41ST_BULKDISCONN_CNF	142	0x8e
IS41-OANSWER-IND	IS41ST_OANSWER_IND	15	0xf
IS41-ODISCONNECT-IND	IS41ST_ODISCONNECT_IND	16	0x10
IS41-ODISCONNECT-CNF	IS41ST_ODISCONNECT_CNF	144	0x90
IS41-TANSWER-IND	IS41ST_TANSWER_IND	17	0x11
IS41-TDISCONNECT-IND	IS41ST_TDISCONNECT_IND	18	0x12

IS41-TDISCONNECT-CNF	IS41ST_TDISCONNECT_CNF	146	0x92
TRANSPARENCY-IND	IS41ST_TRANSP_SRV_IND	19	0x13
TRANSPARENCY-CNF	IS41ST_TRANSP_SRV_CNF	147	0x93
IS41-SERVICE-REQUEST-IND	IS41ST_SERVICEREQ_IND	20	0x14
IS41-SERVICE_REQUEST-CNF	IS41ST_SERVICEREQ_CNF	148	0x94

## 5.5 IS41 Dialog Request

### Synopsis:

Message sent from the user application to the IS41 module containing a dialog request or response primitive.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_DLG_REQ (0xc7b2)	
id	Dialog_ID	
src	Sending module_id	
dst	IS41_TASK_ID	
rsp_req	0	
hclass	0	
status	0	
err_info	0	
len	Number of bytes of user data	
PARAMETER AREA		
Offset	Size	Name
0	1	Dialog primitive type octet.
1	len - 2	Parameters in Name-Length-Data format.
len - 1	1	Set to zero indicating end of message.

### Description:

This message is used by the user application to send dialog primitives to the IS41 module.

All dialog primitives contain a dialog ID, which is encoded in the message header. It does not form part of the parameter area. It must be provided by the user application with the IS41-OPEN-REQ or IS41\_UNI\_REQ primitives. It should also be specified in the message header of all subsequent dialog and service primitives associated with that dialog.

### Parameter area contents:

The dialog primitive type octet is coded as defined in section 5.3, [Dialog Primitive Types](#).

The coding of the dialog primitive parameters is given in section 5.7, [IS41 Dialog Primitive Parameters](#).

The following table lists the parameters associated with each dialog request primitive and shows whether the parameter is mandatory (M), in which case the message will be discarded if the parameter is omitted, or optional (O), in which case the parameter is not essential.

Parameter	IS41 Primitive					
	UNI_REQ	OPEN_REQ	CLOSE_REQ	DELIMITER_REQ	U_ABORT_REQ	OPEN_RSP
Destination address	M	M				
Originating address	O	O				
Result						M
Release method			M			
User reason					M	O
NC	O	O				

## 5.6 IS41 Dialog Indication

### Synopsis:

Protocol message sent from IS41 to the user application containing a dialog indication or confirmation primitive.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_DLG_IND (0x87b3)	
id	Dialog_ID	
src	IS41_TASK_ID	
dst	Sending module_id	
rsp_req	0	
hclass	0	
status	0	
err_info	0	
len	Number of bytes of user data	
PARAMETER AREA		
Offset	Size	Name
0	1	Dialog primitive type octet.
1	len - 2	Parameters in Name-Length-Data format.
len - 1	1	Set to zero indicating end of message.

### Description:

The IS41 module sends dialog indication and confirmation primitives to the user application. The primitives that may be sent are detailed in section 5.3, [Dialog Primitive Types](#).

Indication primitives are sent to indicate incoming dialog control and problem reports. The IS41 module indicates incoming unidirectional dialog, dialog open, close, abort, notice (problem report) and delimiter (end of a group of service requests) primitives.

The user application must confirm the open dialog primitive with the remote peer before accepting service requests from it.

All dialog primitives must contain the dialog ID of the dialog to which they refer. This is encoded in the message header. It does not form part of the parameter area. Incoming dialog requests will have a dialog ID assigned by the IS41 module.

**Parameter area contents:**

The dialogue primitive type octet is coded as defined in section 5.3, [Dialog Primitive Types](#).

The coding of the dialogue primitive parameters is given in section 5.7, [IS41 Dialog Primitive Parameters](#).

The following table lists the parameters associated with each dialogue indication or confirmation primitive and shows whether the parameter is mandatory (M), in which case the message will be discarded if the parameter is omitted, or optional (O), in which case the parameter is not essential.

IS41 Primitive								
Parameter	UNI_IND	OPEN_IND	CLOSE_IND	DELIMITER_IND	U_ABORT_IND	P_ABORT_IND	OPEN_CNF	NOTICE_IND
Destination address	M	M						
Originating address	O	O						
Result							M	M
User reason					O		O	
Provider reason						M		O
Source						M		
Problem diagnostic								M

**Key**

<b>M</b>	<b>Mandatory</b>	The message will be discarded if the corresponding parameter is omitted
<b>O</b>	<b>Optional</b>	The parameter is not essential

## 5.7 IS41 Dialog Primitive Parameters

The following parameter names are defined for use in dialog primitive messages:

Primitive	Mnemonic	Value (dec)	Value (hex)
Destination address	IS41PN_dest_address	1	0x01
Origination address	IS41PN_orig_address	3	0x03
Result	IS41PN_result	5	0x05
Release method	IS41PN_release_method	7	0x07
User reason	IS41PN_user_rsn	8	0x08
Provider reason	IS41PN_prov_rsn	9	0x09
Source	IS41PN_source	12	0x0c
Problem diagnostic	IS41PN_prob_diag	13	0x0d
NC	IS41PN_nc	98	0x62

The coding for each parameter type is given in the following tables:

<b>Parameter name</b>	IS41PN_dest_address
<b>Parameter length</b>	Variable, in the range 2 to 18
<b>Parameter data</b>	Destination address parameter encoded in the format expected by the network layer (e.g., when using SCCP, in accordance with Q.713 definition of "Called party address", starting with the address indicator and containing, optionally, signaling point code, subsystem number and global title).

<b>Parameter name</b>	IS41PN_orig_address
<b>Parameter length</b>	Variable, in the range 2 to 18
<b>Parameter data</b>	Origination address parameter encoded in the format expected by the network layer (e.g., when using SCCP, in accordance with Q.713 definition of "Called party address", starting with the address indicator and containing, optionally, signaling point code and global title).

<b>Parameter name</b>	IS41PN_result
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	0 – accept 1 – dialog refused

<b>Parameter name</b>	IS41PN_release_method
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	0 – normal release 1 – prearranged end

<b>Parameter name</b>	IS41PN_user_rsn
<b>Parameter length</b>	Variable
<b>Parameter data</b>	Any user specific data

<b>Parameter name</b>	IS41PN_prov_rsn
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	0 – provider malfunction 1 – supporting dialog/transaction released 2 – resource limitation 3 – maintenance activity 4 – version incompatibility 5 – abnormal IS41 dialog

<b>Parameter name</b>	IS41PN_source
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	0 – IS41 problem 1 - TC problem 2 – network service problem

<b>Parameter name</b>	IS41PN_prob_diag
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	0 – abnormal event detected by peer 1 – response rejected by peer 2 – abnormal event received from peer

<b>Parameter name</b>	IS41PN_nc
<b>Parameter length</b>	Variable, typically 1. Length of zero indicates that Network Context is unknown.
<b>Parameter data</b>	Network Context ID If the default NC is being used, then this parameter is optional. If present it should have a value of 0. For other Network Contexts, it should match the value defined in the relevant IS41_MSG_NC_CONFIG message.

## 5.8 IS41 Service Request

### Synopsis:

Protocol message sent from the user application to the IS41 module containing a single service-specific request primitive.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_SRV_REQ (0xc7b0)	
id	Dialogue_ID	
src	Sending module_id	
dst	IS41_TASK_ID	
rsp_req	0	
class	0	
status	0	
err_info	0	
len	Number of bytes of user data	
PARAMETER AREA		
Offset	Size	Name
0	1	Primitive type octet.
1	len – 2	Parameters in Name-Length-Data format.
len – 2	1	Set to zero indicating end of message.

### Description:

The user application uses this message to send service-specific request and response primitives to the IS41 module. These primitives correspond directly to the operations specified in the IS41 specification [1].

Once a dialog has been opened with a peer system, the user application may send service-specific primitives to the IS41 module. The IS41 module buffers the service primitives until a dialog primitive requesting the transfer of the service requests to the peer is issued by the user application.

The buffered services are transferred as IS41 operations, coded into the component of the appropriate TCAP package.

The **IS41-CLOSE** primitive transfers the buffered services and closes the dialog. The **IS41-DELIMITER** primitive transfers the buffered service requests and the dialog remains open.

Note that although many service requests may be transferred using one **IS41-CLOSE** or **IS41-DELIMITER** dialog primitive, only one service primitive may be present in each **IS41\_MSG\_SRV\_REQ** message.

In case of Unidirectional Dialog, the Dialog is opened with **IS41DT\_UNI\_REQ** (or **IS41DT\_UNI\_IND**), and is automatically closed with **IS41DT\_DELIMITER\_REQ** (or **IS41DT\_DELIMITER\_IND**)

Service-specific request primitives must contain the dialog ID of the dialog to which they belong. This is encoded in the message header and does not form part of the parameter area.

**Parameter area contents:**

The service-specific primitive type octet is coded as defined in section 5.4, [Service Primitive Types](#).

The coding of service primitive parameters is given in section 5.10, [IS41 Service Primitive Parameters](#).

The following tables show the parameters associated with each service request primitive and show whether the parameter is

- M - MANDATORY in which case the message will be discarded if the parameter is omitted.
- C - CONDITIONAL in which case the parameter is mandatory in some circumstances only. For example, a result service may include a user error parameter or data parameters but not both.
- O - OPTIONAL in which case the parameter is not essential.

The "ACK" table for each service indicates parameters for the Response primitive.

The CONNRES, DISCONNRES and CONNFAILRPT ACK primitives are only used to reports Reject or ReturnError. There is no ReturnResult for those operations, hence no ACK is sent/received for those operations when there is no Error or reject.

The OANSWER and TANSWER operations are sent through UNI dialogs. So, there is no ReturnResult, Reject, or ReturnError for those operations, and hence no ACK either. As those operations are carried through Unidirectionnal dialogs, the timeout are by default not started (the default len of the IS41PN\_timeout parameter is set to 0).

<b>IS41-SMS-DELIVERY-BACKWARD-REQ</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
InterMSCCircuitID	M
MobileIdentificationNumber <sup>1</sup>	C
IMSI <sup>1</sup>	C
SMS_BearerData	M
SMS_TeleserviceIdentifier	M
ElectronicSerialNumber	O
SMS_ChargeIndicator	O
SMS_DestinationAddress	O
SMS_OriginalDestinationAddress	O
SMS_OriginalDestinationSubaddress	O
SMS_OriginalOriginationAddress	O
SMS_OriginalOriginationSubaddress	O
SMS_OriginationAddress	O
Qos	O
Timeout	O
Ellipsis	O

<b>IS41-SMS-DELIVERY-BACKWARD-ACK</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
SMS_BearerData	O
SMS_CauseCode	O
SMS_FaultyParameter	O
User error	C
Provider error (CNF primitive only)	C
Ellipsis	O

---

<sup>1</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

<b>IS41-SMS-DELIVERY-FORWARD-REQ</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
InterMSCCircuitID	M
MobileIdentificationNumber <sup>2</sup>	C
IMSI <sup>2</sup>	C
SMS_BearerData	M
SMS_TeleserviceIdentifier	M
ElectronicSerialNumber	O
SMS_ChargeIndicator	O
SMS_DestinationAddress	O
SMS_OriginalDestinationAddress	O
SMS_OriginalDestinationSubaddress	O
SMS_OriginalOriginationAddress	O
SMS_OriginalOriginationSubaddress	O
SMS_OriginationAddress	O
Qos	O
Timeout	O
Ellipsis	O

<b>IS41-SMS-DELIVERY-FORWARD-ACK</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
SMS_BearerData	O
SMS_CauseCode	O
SMS_FaultyParameter	O
User error	C
Provider error (CNF primitive only)	C
Ellipsis	O

---

<sup>2</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

<b>IS41-SMS-DELIVERY-POINT-TO-POINT-REQ</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
SMS_BearerData	M
SMS_TeleserviceIdentifier	M
ElectronicSerialNumber	O
MobileIdentificationNumber <sup>3</sup>	O
IMSI <sup>3</sup>	O
SMS_ChargeIndicator	O
SMS_DestinationAddress	O
SMS_MessageCount	O
SMS_NotificationIndicator	O
SMS_OriginalDestinationAddress	O
SMS_OriginalDestinationSubaddress	O
SMS_OriginalOriginationAddress	O
SMS_OriginalOriginationSubaddress	O
SMS_OriginationAddress	O
Qos	O
Timeout	O
Ellipsis	O

<b>IS41-SMS-DELIVERY-POINT-TO-POINT-ACK</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
SMS_BearerData	O
SMS_CauseCode	O
SMS_FaultyParameter	O
User error	C
Provider error (CNF primitive only)	C
Ellipsis	O

<sup>3</sup> One of the parameters MobileIdentificationNumber or IMSI may optionally be present.

<b>IS41-SMS-NOTIFICATION-REQ</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
ElectronicSerialNumber	M
MobileIdentificationNumber <sup>4</sup>	C
IMSI <sup>4</sup>	C
SMS_AccessDeniedReason	O
SMS_Address	O
Qos	O
Timeout	O
Ellipsis	O

<b>IS41-SMS-NOTIFICATION-ACK</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
User error	O
Provider error (CNF primitive only)	O
Ellipsis	O

---

<sup>4</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

<b>IS41-SMS-REQUEST-REQ</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
MobileIdentificationNumber <sup>5</sup>	C
IMSI <sup>5</sup>	C
MobileDirectoryNumber	O
ServiceIndicator	O
ElectronicSerialNumber	O
SMS_NotificationIndicator	O
SMS_TeleserviceIdentifier	O
Qos	O
Timeout	O
Ellipsis	O

<b>IS41-SMS-REQUEST-ACK</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
ElectronicSerialNumber	O
SMS_AccessDeniedReason	O
SMS_Address	O
User error	C
Provider error (CNF primitive only)	C
Ellipsis	O

---

<sup>5</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

IS41-ORINATION-REQUEST-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
BillingID	M
Digits	M
ElectronicSerialNumber	M
MSCID	M
OriginationTriggers	M
TransactionCapability	M
MobileIdentificationNumber <sup>6</sup>	C
IMSI <sup>6</sup>	C
CallingPartyName	O
CallingPartyNumberDigits1	O
CallingPartyNumberDigits2	O
CallingPartySubAddress	O
LocationAreaID	O
MobileDirectoryNumber	O
FeatureIndicator	O
MSCIdentificationNumber	O
OneTimeFeatureIndicator	O
PC_SSN	O
PreferredLanguageIndicator	O
SenderIdentificationNumber	O
ServingCellID	O
TriggerType	O
WINCapability	O
Qos	O
Timeout	O
Ellipsis	O

<sup>6</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

<b>IS41-ORINATION-REQUEST-ACK</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
AccessDeniedReason	O
ActionCode	O
AnnouncementList	O
CallingPartyNumberString1	O
CallingPartyNumberString2	O
CallingPartySubAddress	O
CarrierDigits	O
Digits	O
DisplayText	O
DMHAccountCodeDigits	O
DMHAlternateBillingDigits	O
DMHBillingDigits	O
DMHRedirectionIndicator	O
DMHServiceID	O
GroupInformation	O
MobileDirectoryNumber	O
NoAnswerTime	O
OneTimeFeatureIndicator	O
PilotNumber	O
RedirectingNumberDigits	O
RedirectingNumberString	O
RedirectingSubAddress	O
ResumePIC	O
RoutingDigits	O
TerminationList	O
TerminationTriggers	O
TriggerAddressList	O
User Error	C
Provider error (CNF primitive only)	C
Ellipsis	O

IS41-SERVICE-REQUEST-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
ServiceID	M
AccessDeniedReason	O
AvailabilityType	O
BillingID	O
CallingPartyName	O
CallingPartyNumberDigits1	O
CallingPartyNumberDigits2	O
CallingPartySubaddress	O
CarrierDigits	O
CDMAServiceOption	O
ConditionallyDeniedReason	O
DataAccessElementList	O
DestinationDigits	O
Digits	O
DMH_RedirectionIndicator	O
DMH_ServiceID	O
ElectronicSerialNumber	O
ExtendedMSCID	O
FeatureIndicator	O
GroupInformation	O
LegInformationm	O
LocationAreaID	O
MobileDirectoryNumber	O
MSCID	O
MSCIdentificationNumber	O
MobileIdentificationNumber <sup>7</sup>	C
IMSI <sup>7</sup>	C
PC_SSN	O
PilotBillingID	O
PilotNumber	O
PreferredLanguageIndicator	O
RedirectingPartyName	O

<sup>7</sup> One of the parameters MobileIdentificationNumber or IMSI may optionally be present.

RedirectingNumberDigits	0
RedirectingSubaddress	0
RedirectingReason	0
RoutingDigits	0
SenderIdentificationNumber	0
ServingCellID	0
SystemMyTypeCode	0
TDMAServiceCode	0
TerminationAccessType	0
TimeDateOffset	0
TimeOfDay	0
TransactionCapability	0
TriggerType	0
WINCapability	0
Qos	0
Timeout	0
Ellipsis	0

IS41-SERVICE-REQUEST-ACK	
Parameter	Class
Primitive type octet	M
Invoke ID	M
AccessDeniedReason	O
ActionCode	O
AlertCode	O
AnnouncementList	O
CallingPartyName	O
CallingPartyNumberString1	O
CallingPartyNumberString2	O
CallingPartySubaddress	O
CarrierDigits	O
Digits	O
DisplayText <sup>8</sup>	C
DisplayText2 <sup>8</sup>	C
DMH_AccountCodeDigits	O
DMH_AlternateBillingDigits	O
DMH_BillingDigits	O
DMH_ChargeInformation	O
DMH_RedirectionIndicator	O
DMH_ServiceID	O
GroupInformation	O
MobileDirectoryNumber	O
NoAnswerTime	O
RedirectingNumberDigits	O
RedirectingNumberString	O
RedirectingPartyName	O
RedirectingSubaddress	O
ResumePIC	O
RoutingDigits	O
TerminationList	O
TriggerAddressList	O
Ellipsis	O
User Error	C
Provider Error (CNF Primitive only)	C

<sup>8</sup> One of the parameters DisplayText or DisplayText2 may optionally be present

IS41-ANALYZED-INFORMATION-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
BillingID	M
Digits	M
MSCID	M
TransactionCapability	M
TriggerType	M
WINCapability	M
CallingPartyName	O
CallingPartyNumberDigits1	O
CallingPartyNumberDigits2	O
CallingPartySubAddress	O
CarrierDigits	O
ConferenceCallingIndicator	O
DestinationDigits	O
DMHRedirectionIndicator	O
ElectronicSerialNumber	O
FeatureIndicator	O
LocationAreaID	O
MobileDirectoryNumber	O
MobileIdentificationNumber <sup>9</sup>	C
IMSI <sup>9</sup>	C
MSCIdentificationNumber	O
OneTimeFeatureIndicator	O
PreferredLanguageIndicator	O
RedirectingNumberDigits	O
RedirectingPartyName	O
RedirectingSubAddress	O
RoutingDigits	O
ServingCellID	O
SystemMyTypeCode	O
TerminationAccessType	O
TimeDateOffset	O

<sup>9</sup> One of the parameters MobileIdentificationNumber or IMSI may optionally be present.

TimeOfDay	O
Qos	O
Timeout	O
Ellipsis	O

IS41-ANALYZED-INFORMATION-ACK	
Parameter	Class
Primitive type octet	M
Invoke ID	M
AccessDeniedReason	O
ActionCode	O
AnnouncementList	O
CarrierDigits	O
ConferenceCallingIndicator	O
Digits	O
DisplayText	O
DMHAccountCodeDigits	O
DMHAlternateBillingDigits	O
DMHBillingDigits	O
DMHRedirectionIndicator	O
DMHServiceID	O
NoAnswerTime	O
OneTimeFeatureIndicator	O
RedirectingNumberDigits	O
ResumePIC	O
RoutingDigits	O
TerminationList	O
TerminationTriggers	O
TriggerAddressList	O
User Error	C
Provider error (CNF primitive only)	C
Ellipsis	O

IS41-CONNECT-RESOURCE-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
DestinationDigits	M
CarrierDigits	O
RoutingDigits	O
Qos	O
Ellipsis	O

IS41-CONNECT-RESOURCE-ACK	
Parameter	Class
Primitive type octet	M
Invoke ID	M
User Error (Mandatory in RSP)	C
Provider error (CNF primitive only)	C
Ellipsis	O

IS41-CONNECT-FAILURE-REPORT-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
FailureType	M
FailureCause	O
Qos	O
Ellipsis	O

IS41-CONNECT-FAILURE-REPORT-ACK	
Parameter	Class
Primitive type octet	M
Invoke ID	M
User Error (Mandatory in RSP)	C
Provider error (CNF primitive only)	C
Ellipsis	O

<b>IS41-DISCONNECT-RESOURCE-REQ</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
Qos	O
Ellipsis	O

<b>IS41-DISCONNECT-RESOURCE -ACK</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
User Error (Mandatory in RSP)	C
Provider error (CNF primitive only)	C
Ellipsis	O

IS41-TBUSY-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
BillingID	M
MSCID	M
TransactionCapability	M
TriggerType	M
WINCapability	M
CallingPartyNumberDigits1	O
CallingPartyNumberDigits2	O
CallingPartySubAddress	O
ElectronicSerialNumber	O
GroupInformation	O
LegInformation	O
LocationAreaID	O
MobileDirectoryNumber	O
MobileIdentificationNumber <sup>10</sup>	C
IMSI <sup>10</sup>	C
MSCIdentificationNumber	O
OneTimeFeatureIndicator	O
PilotBillingID	O
PilotNumber	O
PreferredLanguageIndicator	O
RedirectingNumberDigits	O
RedirectingSubAddress	O
RedirectionReason	O
ServingCellID	O
SystemMyTypeCode	O
TerminationAccessType	O
Qos	O
Timeout	O
Ellipsis	O

<sup>10</sup> One of the parameters MobileIdentificationNumber or IMSI may optionally be present.

IS41-TBUSY-ACK	
Parameter	Class
Primitive type octet	M
Invoke ID	M
AccessDeniedReason	O
ActionCode	O
AnnouncementList	O
CallingPartyNumberString1	O
CallingPartyNumberString2	O
CarrierDigits	O
DisplayText	O
DMHAccountCodeDigits	O
DMHAlternateBillingDigits	O
DMHBillingDigits	O
DMHRedirectionIndicator	O
DMHServiceID	O
GroupInformation	O
OneTimeFeatureIndicator	O
PilotNumber	O
PreferredLanguageIndicator	O
RedirectingNumberDigits	O
ResumePIC	O
RoutingDigits	O
TerminationList	O
TerminationTriggers	O
TriggerAddressList	O
User Error	C
Provider error (CNF primitive only)	C
Ellipsis	O

IS41-TNOANSWER-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
BillingID	M
MSCID	M
TransactionCapability	M
TriggerType	M
WINCapability	M
CallingPartyNumberDigits1	O
CallingPartyNumberDigits2	O
CallingPartySubAddress	O
ElectronicSerialNumber	O
GroupInformation	O
LegInformation	O
LocationAreaID	O
MobileDirectoryNumber	O
MobileIdentificationNumber <sup>11</sup>	C
IMSI <sup>11</sup>	C
MSCIdentificationNumber	O
OneTimeFeatureIndicator	O
PilotBillingID	O
PilotNumber	O
PreferredLanguageIndicator	O
RedirectingNumberDigits	O
RedirectingSubAddress	O
RedirectionReason	O
ServingCellID	O
SystemMyTypeCode	O
TerminationAccessType	O
Qos	O
Timeout	O
Ellipsis	O

<sup>11</sup> One of the parameters MobileIdentificationNumber or IMSI may optionally be present.

IS41-TNOANSWER-ACK	
Parameter	Class
Primitive type octet	M
Invoke ID	M
AccessDeniedReason	O
ActionCode	O
AnnouncementList	O
CallingPartyNumberString1	O
CallingPartyNumberString2	O
CarrierDigits	O
DisplayText	O
DMHAccountCodeDigits	O
DMHAlternateBillingDigits	O
DMHBillingDigits	O
DMHRedirectionIndicator	O
DMHServiceID	O
GroupInformation	O
OneTimeFeatureIndicator	O
PilotNumber	O
PreferredLanguageIndicator	O
RedirectingNumberDigits	O
ResumePIC	O
RoutingDigits	O
TerminationList	O
TerminationTriggers	O
TriggerAddressList	O
User Error	C
Provider error (CNF primitive only)	C
Ellipsis	O

<b>IS41-BULK-DISCONNECTION-REQ</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
MSCID	M
TimeDateOffset	M
TimeOfDay	M
MSCIdentificationNumber	O
SenderIdentificationNumber	O
Qos	O
Timeout	O
Ellipsis	O

<b>IS41-BULK-DISCONNECTION-ACK</b>	
<b>Parameter</b>	<b>Class</b>
Primitive type octet	M
Invoke ID	M
User Error	C
Provider error (CNF primitive only)	C
Ellipsis	O

IS41-CALL-CONTROL-DIRECTIVE-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
BillingID	M
MSCID	M
MobileIdentificationNumber <sup>12</sup>	C
IMSI <sup>12</sup>	C
ActionCode	O
AnnouncementList	O
DisplayText	O
DMHAccountCodeDigits	O
DMHAlternateBillingDigits	O
DMHBillingDigits	O
DMHRedirectionIndicator	O
ElectronicSerialNumber	O
MobileDirectoryNumber	O
PreferredLanguageIndicator	O
TerminationList	O
TriggerAddressList	O
Qos	O
Timeout	O
Ellipsis	O

IS41-CALL-CONTROL-DIRECTIVE-ACK	
Parameter	Class
Primitive type octet	M
Invoke ID	M
CallStatus	O
User Error	C
Provider error (CNF primitive only)	C
Ellipsis	O

---

<sup>12</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

IS41-OANSWER-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
BillingID	M
ElectronicSerialNumber	M
MSCID	M
TimeDateOffset	M
TimeOfDay	M
TriggerType	M
MobileIdentificationNumber <sup>13</sup>	C
IMSI <sup>13</sup>	C
LocationAreaID	O
MobileDirectoryNumber	O
FeatureIndicator	O
MSCIdentificationNumber	O
ServingCellID	O
SystemMyTypeCode	O
Qos	O
Ellipsis	O

<sup>13</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

IS41-ODISCONNECT-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
BillingID	M
ElectronicSerialNumber	M
MSCID	M
ReleaseCause	M
TimeDateOffset	M
TimeOfDay	M
TransactionCapability	M
WINCapability	M
TriggerType	M
MobileIdentificationNumber <sup>14</sup>	C
IMSI <sup>14</sup>	C
LocationAreaID	O
MobileDirectoryNumber	O
MSCIdentificationNumber	O
ServingCellID	O
SystemMyTypeCode	O
qos	O
Timeout	O
Ellipsis	O

IS41-ODISCONNECT-ACK	
Parameter	Class
Primitive type octet	M
Invoke ID	M
AnnouncementList	O
DMHServiceID	O
User Error	C
Provider error (CNF primitive only)	C
Ellipsis	O

<sup>14</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

IS41-TANSWER-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
BillingID	M
ElectronicSerialNumber	M
MSCID	M
TimeDateOffset	M
TimeOfDay	M
TransactionCapability	M
TriggerType	M
WINCapability	M
MobileIdentificationNumber <sup>15</sup>	C
IMSI <sup>15</sup>	C
LocationAreaID	O
MobileDirectoryNumber	O
FeatureIndicator	O
MSCIdentificationNumber	O
ServingCellID	O
SystemMyTypeCode	O
TerminationAccessType	O
Qos	O
Ellipsis	O

<sup>15</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

IS41-TDISCONNECT-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
BillingID	M
ElectronicSerialNumber	M
MSCID	M
TimeDateOffset	M
TimeOfDay	M
TriggerType	M
MobileIdentificationNumber <sup>16</sup>	C
IMSI <sup>16</sup>	C
LocationAreaID	O
MobileDirectoryNumber	O
MSCIdentificationNumber	O
ReleaseCause	O
ServingCellID	O
SystemMyTypeCode	O
Qos	O
Timeout	O
Ellipsis	O

IS41-TDISCONNECT-ACK	
Parameter	Class
Primitive type octet	M
Invoke ID	M
DMHServiceID	O
User Error	C
Provider error (CNF primitive only)	C
Ellipsis	O

<sup>16</sup> One of the parameters MobileIdentificationNumber or IMSI must be present.

TRANSPARENCY-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
Raw contents of the TCPPN_COMPONENT TCAP parameter	M
Qos	O
Timeout	O

TRANSPARENCY-RSP	
Parameter	Class
Primitive type octet	M
Invoke ID	M
Raw contents of the TCPPN_COMPONENT TCAP parameter	M

### 5.8.1

### TRANSPARENCY-REQ and TRANSPARENCY-RSP

- The raw content of the **TCPPN\_COMPONENT TCAP** parameter is sent unmodified to the TCAP module. The first byte of this parameter is the "Component Type Identifier". Refer to section 5.3 in T1.114.2 [6], to section 5.3 in T1.114.3 [6], and to section 6.3.2 in TIA/EIA-41.5-D [1].
- The Invoke ID parameter must be provided and it must match the value of the "Component ID" embedded in the raw contents of the **TCPPN\_COMPONENT TCAP** parameter. Refer to section 5.7 in T1.114.2 [6], to section 5.7 in T1.114.3 [6], and to section 6.3.2 in TIA/EIA-41.5-D [1].
- Unlike other response primitives, **TRANSPARENCY-RSP** does not handle the User Error parameter, which usually makes the IS41 module send a "Return Error" component to the TCAP module when present, instead of a "Return Result" component when absent.  
This behavior is not necessary here, because the kind of component that must be sent to the TCAP module is determined according to the "Component Type Identifier", which is the first byte of the raw contents of the **TCPPN\_COMPONENT TCAP** parameter.
- The "Invoke Not Last" and "Return Result Not Last" component type identifiers are not supported.

## 5.9 IS41 Service Indication

### Synopsis:

Protocol message sent from the IS41 module to the user application containing a service-specific primitive.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_SRV_IND (0x87b1)	
id	Dialogue_ID	
src	IS41_TASK_ID	
dst	Sending module_id	
rsp_req	0	
hclass	0	
status	0	
err_info	0	
len	Number of bytes of user data	
PARAMETER AREA		
Offset	Size	Name
0	1	Primitive type octet.
1	len - 2	Parameters in Name-Length-Data format.
len - 1	1	Set to zero indicating end of message.

### Description:

The IS41 module uses this message to send service-specific indication and confirmation primitives to the user application. The primitives that may be sent are detailed in section 5.4, [Service Primitive Types](#).

All service-specific indication primitives contain the dialog ID of the dialog to which they belong. It is encoded in the message header and does not form part of the parameter area.

### Parameter area contents:

The parameter area is coded as defined for the **IS41-SERVICE-REQUEST** message.

The coding of service primitive parameters is given in section 5.10, [IS41 Service Primitive Parameters](#).

The parameters included in each primitive are as defined for the **IS41-SERVICE-REQUEST** message. The parameters for the Indication primitive are the same as those for the Request primitive. The parameters for the Confirmation primitive are the same as those for the Response primitive, with the addition of the optional "Provider error" parameter. Additionally, the parameters associated with **the TRANSPARENCY-IND** and **TRANSPARENCY-CNF** primitives are listed in the following tables:

TRANSPARENCY-IND	
Parameter	Class
Primitive type octet	M
Invoke ID	M
Raw contents of the TCPPN_COMPONENT TCAP parameter	M

TRANSPARENCY-CNF	
Parameter	Class
Primitive type octet	M
Invoke ID	M
Raw contents of the TCPPN_COMPONENT TCAP parameter	C
User error	C
Provider error	C

### 5.9.1

#### TRANSPARENCY-IND and TRANSPARENCY-CNF

- The raw content of the **TCPPN\_COMPONENT TCAP** parameter is sent unmodified to the user application. The first byte of this parameter is the "Component Type Identifier".
- The Invoke ID and User error parameters are retrieved from the raw contents of the **TCPPN\_COMPONENT TCAP** parameter.
- In **TRANSPARENCY-CNF** primitives, at least one of the three conditional parameters is present.

## 5.10 IS41 Service Primitive Parameters

The following parameter names are defined for use in service primitive messages:

**Table 3. IS41 Service Primitive Parameters**

Primitive	Mnemonic	Value (dec)	Value (hex)
Invoke ID	IS41PN_invoke_id	14	0x0e
Linked ID	IS41PN_linked_id	15	0x0f
Timeout	IS41PN_timeout	16	0x10
InterMSCCircuitID	IS41PN_interMSCcctId	17	0x11
MobileIdentificationNumber	IS41PN_mobileIdNum	18	0x12
SMS_BearerData	IS41PN_SMSbearerdata	19	0x13
SMS_TeleserviceIdentifier	IS41PN_SMSstelesrvId	20	0x14
ElectronicSerialNumber	IS41PN_esn	21	0x15
SMS_ChargeIndicator	IS41PN_SMSchargeInd	22	0x16
User error	IS41PN_user_err	23	0x17
Provider error	IS41PN_prov_err	24	0x18
SMS_DestinationAddress	IS41PN_SMSdestAddr	25	0x19
SMS_OriginalDestinationAddress	IS41PN_SMSorigDestAddr	26	0x1a
SMS_OriginalDestinationSubaddress	IS41PN_SMSorigDestSubAddr	27	0x1b
SMS_OriginationAddress	IS41PN_SMSorigAddr	28	0x1c
SMS_OriginalOriginationAddress	IS41PN_SMSorigOrigAddr	29	0x1d
SMS_OriginalOriginationSubaddress	IS41PN_SMSorigOrigSubAddr	30	0x1e
SMS_CauseCode	IS41PN_SMScauseCode	31	0x1f
SMS_MessageCount	IS41PN_SMSmsgCount	32	0x20
SMS_NotificationIndicator	IS41PN_SMSnoteInd	33	0x21
SMS_AccessDeniedReason	IS41PN_SMSaccessDeniedRsn	34	0x22
SMS_Address	IS41PN_SMSaddress	35	0x23
SMS_FaultyParameter	IS41PN_faultyParam	36	0x24
DestinationDigits	IS41PN_destinationDigits	37	0x25
CarrierDigits	IS41PN_carrierDigits	38	0x26
RoutingDigits	IS41PN_routingDigits	39	0x27
BillingID	IS41PN_billingID	40	0x28
MSCID	IS41PN_MSCID	41	0x29
TransactionCapability	IS41PN_transactionCapability	42	0x2a
TriggerType	IS41PN_triggerType	43	0x2b
CallingPartyNumberDigits1	IS41PN_callingPartyNumberDigits1	44	0x2c
CallingPartyNumberDigits2	IS41PN_callingPartyNumberDigits2	45	0x2d

CallingPartySubAddress	IS41PN_callingPartySubAddress	46	0x2e
GroupInformation	IS41PN_groupInformation	47	0x2f
LegInformation	IS41PN_legInformation	48	0x30
LocationAreaID	IS41PN_locationAreaID	49	0x31
MobileDirectoryNumber	IS41PN_mobileDirectoryNumber	50	0x32
MSCIdentificationNumber	IS41PN_MSCIdentificationNumber	51	0x33
OneTimeFeatureIndicator	IS41PN_oneTimeFeatureIndicator	52	0x34
PilotBillingID	IS41PN_pilotBillingID	53	0x35
PilotNumber	IS41PN_pilotNumber	54	0x36
PreferredLanguageIndicator	IS41PN_preferredLanguageIndicator	55	0x37
RedirectingNumberDigits	IS41PN_redirectingNumberDigits	56	0x38
RedirectingSubAddress	IS41PN_redirectingSubAddress	57	0x39
RedirectionReason	IS41PN_redirectionReason	58	0x3a
ServingCellID	IS41PN_servingCellID	59	0x3b
SystemMyTypeCode	IS41PN_systemMyTypeCode	60	0x3c
TerminationAccessType	IS41PN_terminationAccessType	61	0x3d
Digits	IS41PN_digits	62	0x3e
OriginationTriggers	IS41PN_originationTriggers	63	0x3f
CallingPartyName	IS41PN_callingPartyName	64	0x40
FeatureIndicator	IS41PN_featureIndicator	65	0x41
PC_SSN	IS41PN_PC_SSN	66	0x42
SenderIdentificationNumber	IS41PN_senderIdentificationNumber	67	0x43
ConferenceCallingIndicator	IS41PN_conferenceCallingIndicator	68	0x44
DMHRedirectionIndicator	IS41PN_DMHRedirectionIndicator	69	0x45
RedirectingPartyName	IS41PN_redirectingPartyName	70	0x46
TimeDateOffset	IS41PN_timeDateOffset	71	0x47
TimeOfDay	IS41PN_timeOfDay	72	0x48
FailureType	IS41PN_failureType	73	0x49
FailureCause	IS41PN_failureCause	74	0x4a
ActionCode	IS41PN_actionCode	75	0x4b
DisplayText	IS41PN_displayText	76	0x4c
DMHAccountCodeDigits	IS41PN_DMHAccountCodeDigits	77	0x4d
DMHAlternateBillingDigits	IS41PN_DMHAlternateBillingDigits	78	0x4e
ReleaseCause	IS41PN_releaseCause	79	0x4f
DMHBillingDigits	IS41PN_DMHBillingDigits	80	0x50
IMSI	IS41PN_IMSI	81	0x51
WINCapability	IS41PN_WINCapability	82	0x52
AnnouncementList	IS41PN_announcementList	83	0x53

TerminationList	IS41PN_terminationList	84	0x54
AccessDeniedReason	IS41PN_accessDeniedReason	85	0x55
CallingPartyNumberString1	IS41PN_callingPartyNumberString1	86	0x56
CallingPartyNumberString2	IS41PN_callingPartyNumberString2	87	0x57
NoAnswerTime	IS41PN_noAnswerTime	88	0x58
RedirectingNumberString	IS41PN_redirectingNumberString	89	0x59
TerminationTriggers	IS41PN_terminationTriggers	90	0x5a
ResumePIC	IS41PN_resumePIC	91	0x5b
CallStatus	IS41PN_callStatus	92	0x5c
DMHServiceID	IS41PN_DMHServiceID	93	0x5d
triggerAddressList	IS41PN_triggerAddressList	94	0x5e
Raw contents of the TCPPN_COMPONENT TCAP parameter	IS41PN_transp_component	95	0x5f
Qos	IS41PN_qos	96	0x60
Ellipsis	IS41PN_ellipsis	97	0x61
ServiceIndicator	IS41PN_serviceIndicator	99	0x63
ServiceID	IS41PN_serviceID	100	0x64
AvailabilityType	IS41PN_availabilityType	101	0x65
ConditionallyDeniedReason	IS41PN_conditionallyDeniedReason	102	0x66
DataAccessElementList	IS41PN_dataAccessElementList	103	0x67
ExtendedMSCID	IS41PN_extendedMSCID	104	0x68
AlertCode	IS41PN_alertCode	105	0x69
DMH_ChargeInformation	IS41PN_DMHChargeInformation	106	0x6a
CDMAServiceOption	IS41PN_CDMAServiceOption	107	0x6b
TDMAServiceCode	IS41PN_TDMAServiceCode	108	0x6c
DisplayText2	IS41PN_displayText2	109	0x6d

Service-specific parameters are transferred transparently by the IS41 module.

Some service-specific parameters are specified with a fixed length. If received parameters are not the specified length, an error component is returned.

Some service-specific parameters have a specified length, but additional received octets are specified to be ignored. Additional received octets are ignored and the parameter is handled normally.

The user application is sent a notice indication primitive if a service request containing an error is received from the network. The user is sent an open confirm primitive with a user error parameter if a result containing an error is received.

The coding for each parameter type is given in the following tables:

<b>Parameter name</b>	IS41PN_invoke_id
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	Single octet providing a unique invocation ID for each service request. Encoded in the range -128 to +127

<b>Parameter name</b>	IS41PN_linked_id
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	Provides the invoke ID of the service to which this service request indication is linked. Used only where an IS41 operation is specified to permit another operation invocation as a response. Encoded in the range -128 to +127

<b>Parameter name</b>	IS41PN_timeout
<b>Parameter length</b>	Variable, set to 0 or 2 Set the length to 0 to disable the timer. Set it to 2 to specify the timer value in parameter data.
<b>Parameter data</b>	Used in service request primitives only. Permits the user to indicate the TCAP timeout period associated with this service. The IS41 module will provide a default timeout, specific to each operation, if this parameter is not included.  If the length is set to 2, the timer is encoded in the range 0 to 1800 seconds.  If the length is set to 2 and the timer is set to 0, a timer is started and expires immediately.

<b>Parameter name</b>	IS41PN_interMSCcctld
<b>Parameter length</b>	Fixed, set to 2
<b>Parameter data</b>	Two octets encoded as specified in TIA/EIA-41.5-D, i.e.: Octet 1 - Trunk Group Member Octet 2 - Trunk Member Number

<b>Parameter name</b>	IS41PN_mobileIdNum
<b>Parameter length</b>	Fixed, set to 5
<b>Parameter data</b>	Five octets encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_SMSbearerdata
<b>Parameter length</b>	Variable, in the range 1 to 200
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D. I.e. user defined.

<b>Parameter name</b>	IS41PN_SMStelesrvid
<b>Parameter length</b>	Fixed, set to 2 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_esn
<b>Parameter length</b>	Fixed, set to 4.
<b>Parameter data</b>	Electronic Serial Number encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_SMSchargeInd
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_user_err
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D., i.e.: 129 - UnrecognisedMIN 130 - UnrecognisedESN 131 - MIN_HLRMismatch 132 - OperationSequenceProblem 133 - ResourceShortage 134 - OperationNotSupported 135 - TrunkUnavailable 136 - ParameterError 137 - SystemFailure 138 - UnrecognisedParameterValue 139 - FeatureInactive 140 - MissingParameter

<b>Parameter name</b>	IS41PN_prov_err
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	Single octet coded as follows: 1 - duplicated invoke ID 2 - not supported service 3 - mistyped parameter 4 - resource limitation 5 - initiating release 6 - unexpected response from peer 7 - service completion failure 8 - no response from peer 9 - invalid response received

<b>Parameter name</b>	IS41PN_SMSdestAddr
<b>Parameter length</b>	Variable, in the range 4 to 12
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_SMSorigDestAddr
<b>Parameter length</b>	Variable, in the range 4 to 133
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_SMSorigDestSubAddr
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_SMSorigAddr
<b>Parameter length</b>	Variable, in the range 4 to 12
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_SMSorigOrigAddr
<b>Parameter length</b>	Variable, in the range 4 to 133
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_SMSorigOrigSubAddr
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_SMScauseCode
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_SMSmsgCount
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_SMSnotelnd
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_SMSaccessDeniedRsn
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_SMSaddress
<b>Parameter length</b>	Variable, in the range 4 to 12
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_faultyParam
<b>Parameter length</b>	Variable in range 1 to 3
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_destinationDigits
<b>Parameter length</b>	Variable, in the range 4 to 69
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_CarrierDigits
<b>Parameter length</b>	Variable, in range 4 to 7.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_routingDigits
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_billingID
<b>Parameter length</b>	Fixed, set to 7.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_MSCID
<b>Parameter length</b>	Fixed, set to 3.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_transactionCapability
<b>Parameter length</b>	Fixed, set to 2 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_triggerType
<b>Parameter length</b>	Fixed, set to 1.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-771

<b>Parameter name</b>	IS41PN_callingPartyNumberDigits1
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_callingPartyNumberDigits2
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_callingPartySubAddress
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_groupInformation
<b>Parameter length</b>	Fixed, set to 4 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_legInformation
<b>Parameter length</b>	Fixed, set to 4 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_locationAreaID
<b>Parameter length</b>	Fixed, set to 2
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_mobileDirectoryNumber
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_MSCIdentificationNumber
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_oneTimeFeatureIndicator
<b>Parameter length</b>	Fixed, set to 2 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_pilotBillingID
<b>Parameter length</b>	Fixed, set to 7.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_pilotNumber
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_preferredLanguageIndicator
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_redirectingNumberDigits
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_redirectingSubAddress
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_redirectionReason
<b>Parameter length</b>	Fixed, set to 1.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_servingCellID
<b>Parameter length</b>	Fixed, set to 2.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_systemMyTypeCode
<b>Parameter length</b>	Fixed, set to 1.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_terminationAccessType
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_digits
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_originationTriggers
<b>Parameter length</b>	Variable, in range 1 to 4 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_callingPartyName
<b>Parameter length</b>	Variable, in range 1 to 16.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-764

<b>Parameter name</b>	IS41PN_featureIndicator
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-826.

<b>Parameter name</b>	IS41PN_PC_SSN
<b>Parameter length</b>	Fixed, set to 5.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_senderIdentificationNumber
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_conferenceCallingIndicator
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_DMHR redirectionIndicator
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_redirectingPartyName
<b>Parameter length</b>	Variable, in range 1 to 16.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-764

<b>Parameter name</b>	IS41PN_timeDateOffset
<b>Parameter length</b>	Fixed, set to 2.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-771.

<b>Parameter name</b>	IS41PN_timeOfDay
<b>Parameter length</b>	Fixed, set to 3.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-826

<b>Parameter name</b>	IS41PN_failureType
<b>Parameter length</b>	Fixed, set to 1.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-771.

<b>Parameter name</b>	IS41PN_failureCause
<b>Parameter length</b>	Variable, minimum 2 octets.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-771.

<b>Parameter name</b>	IS41PN_actionCode
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_displayText
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-764.

<b>Parameter name</b>	IS41PN_DMHAccountCodeDigits
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_DMHAlternateBillingDigits
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_releaseCause
<b>Parameter length</b>	Fixed, set to 1.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-826

<b>Parameter name</b>	IS41PN_DMHBillingDigits
<b>Parameter length</b>	Variable, in range 4 to 69.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D

<b>Parameter name</b>	IS41PN_IMSI
<b>Parameter length</b>	Variable, in range 1 to 8.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-751.

<b>Parameter name</b>	IS41PN_WINCAbility
<b>Parameter length</b>	Variable, in range 5 to 12 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-771.

<b>Parameter name</b>	IS41PN_announcementList
<b>Parameter length</b>	Variable, minimum 4 octets.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_terminationList
<b>Parameter length</b>	Variable, minimum 10 bytes.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_accessDeniedReason
<b>Parameter length</b>	Fixed, set to 1.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_callingPartyNumberString1
<b>Parameter length</b>	Variable, in range 4 to 133.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_callingPartyNumberString2
<b>Parameter length</b>	Variable, in range 4 to 133.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_noAnswerTime
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_redirectingNumberString
<b>Parameter length</b>	Variable, in range 4 to 133.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_terminationTriggers
<b>Parameter length</b>	Fixed, set to 2 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D.

<b>Parameter name</b>	IS41PN_resumePIC
<b>Parameter length</b>	Fixed, set to 1.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-771.

<b>Parameter name</b>	IS41PN_callStatus
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-826.

<b>Parameter name</b>	IS41PN_DMHServiceID
<b>Parameter length</b>	Variable, minimum 5 octets.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-826.

<b>Parameter name</b>	IS41PN_triggerAddressList
<b>Parameter length</b>	Variable, minimum 16 octets.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-771.

<b>Parameter name</b>	IS41PN_transp_component
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Component data encoded as specified in section 5 of T1.114.2, in section 5 of T1.114.3, and in section 6.3.2 of TIA/EIA-41.5-D, commencing with the "Component Type Identifier".

<b>Parameter name</b>	IS41PN_qos
<b>Parameter length</b>	Fixed, set to 1
<b>Parameter data</b>	Used in service request primitives only. Permits the user to indicate the TCAP Quality of Service. Bit 0 – Set to 1 if the Return Option is selected. Bit 1 – Set to 1 if Sequence control is required (This will result in SCCP class 1 being used). Set to 0 if Sequence control is not required (this will result in SCCP class 0) If not specified by the application, this parameter is internally set to 2 by the IS41 module.

<b>Parameter name</b>	IS41PN_ellipsis
<b>Parameter length</b>	Variable, in the range 2 to 220 (range is 2 to 255 when IS41F_SEGMENTATION flag is set)
<b>Parameter data</b>	A series of parameters in tag, length data format as defined by the users.

<b>Parameter name</b>	IS41PN_serviceIndicator
<b>Parameter length</b>	Variable, typically 1
<b>Parameter data</b>	Type of service, encoded as specified in N.S0011-0 (parameter 6.5.2.wB), i.e. 1 – CDMA OTASP 2 – TDMA OTASP 3 – CDMA OTAPA

<b>Parameter name</b>	IS41PN_serviceID
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in N.S0012-0 (parameter 6.5.2.bz).

<b>Parameter name</b>	IS41PN_availabilityType
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D (parameter 6.5.2.15).

<b>Parameter name</b>	IS41PN_conditionallyDeniedReason
<b>Parameter length</b>	Fixed, set to 1.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D (parameter 6.5.2.48).

<b>Parameter name</b>	IS41PN_dataAccessElementList
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in TIA/EIA/IS-771 (parameter 6.5.2.cd).

<b>Parameter name</b>	IS41PN_extendedMSCID
<b>Parameter length</b>	Fixed, set to 4.
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D (parameter 6.5.2.64).

<b>Parameter name</b>	IS41PN_alertCode
<b>Parameter length</b>	Fixed, set to 2 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in TIA/EIA-41.5-D (parameter 6.5.2.3).

<b>Parameter name</b>	IS41PN_DMHChargeInformation
<b>Parameter length</b>	Variable.
<b>Parameter data</b>	Encoded as specified in N.S0004-0 (parameter 6.5.2.eo).

<b>Parameter name</b>	IS41PN_CDMAServiceOption
<b>Parameter length</b>	Fixed, set to 2 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in N.S0006-0 (parameter 6.5.2.f).

<b>Parameter name</b>	IS41PN_TDMAServiceCode
<b>Parameter length</b>	Fixed, set to 1 (additional octets ignored).
<b>Parameter data</b>	Encoded as specified in N.S0006-0 (parameter 6.5.2.i).

<b>Parameter name</b>	IS41PN_displayText2
<b>Parameter length</b>	Variable, minimum 5 octets.
<b>Parameter data</b>	Encoded as specified in N.S0015-0 (parameter 6.5.2.ec).

## 6 Non-Primitive Interface

In addition to the primitive interface for passing IS41 protocol messages between the IS41 module and the user application, the IS41 module supports a non-primitive interface for implementation-specific functionality.

The non-primitive interface permits the configuration of the IS41 module.

It also allows the IS41 module to supply diagnostic information, protocol error events and software error events to the local system management and maintenance modules.

This section describes the formats of the messages used in the non-primitive interface.

The messages handled by IS41 may request a confirmation. This is done by setting the **rsp\_req** field in the message header. See Appendix A of the Dialogic® Distributed Signaling Interface Components - Software Environment Programmer's Manual. The confirmation message consists of the received message echoed back to the sending module. The status field of the confirmation message header may take the following values.

Mnemonic	Value	Description
IS41E_MSG_OK	0	No error message received OK.
IS41E_BAD_ID	1	Inappropriate or invalid <b>ID</b> in request message
IS41E_BAD_STATE	2	Inappropriate or unrecognised message <b>type</b> .
IS41E_BAD_MSG	5	Unsupported message received.
IS41E_BAD_PARAM	6	Invalid parameters contained in message.
IS41E_NO_RESOURCES	7	Insufficient internal message resources.
IS41E_INVALID_NC	8	Invalid Network Context value.
IS41E_INVALID_VERSION	9	Message version is invalid.

## 6.1 IS41 Configuration Request

### Synopsis:

Message used to configure the IS41 module for operation.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_CONFIG (0x77b4)	
ld	0	
src	Sending module_id	
dst	IS41_TASK_ID	
rsp_req	Used to request a confirmation	
hclass	0	
status	0	
srr_info	0	
len	40	
PARAMETER AREA		
Offset	Size	Name
0	1	user_id
1	1	TCAP_id
2	1	mngt_id
3	1	maint_id
4	1	trace_id
5	1	reserved
6	2	base_usr_ogdlg_id
8	2	base_usr_icdlg_id
10	2	base_tc_ogdlg_id
12	2	base_tc_icdlg_id
14	2	nog_dialogues
16	2	nic_dialogues
18	2	num_invokes
20	4	options
24	2	error_offset
26	14	reserved

**Description:**

This message is used to configure the IS41 module for operation. It should be the first message sent to the module (any messages received before a valid configuration message will be discarded). It should only be issued once.

The message parameters relate to the environment in which the IS41 module is operating.

This message defines the default Network Context (NCO) for the module. If subsequent Network Contexts are required the IS41\_MSG\_NC\_CONFIG message (see [Appendix B, Message Type reference](#)) must be used.

**Confirmation Message:**

The module sending the message can optionally request that a confirmation message be returned by the IS41 module after the message has been processed. This is achieved by setting the **rsp\_req** field in the message header. This will cause a confirmation message of the same format to be returned. The status field in this message is zero on success or an error code otherwise.

**Parameter Description:****user\_id**

User application module ID.

**TCAP\_id**

TCAP module ID.

**mngt\_id**

Management module ID.

**maint\_id**

Maintenance module ID.

**trace\_id**

Trace module ID.

**base\_usr\_ogdlg\_id**

The base user dialog ID for user dialog IDs assigned by the user for outgoing dialogues. The subsequent (**nog\_dialogues** - 1) dialog IDs will also be available to the user. The user must ensure that all values used in the dialog ID field of protocol messages relating to outgoing dialogs lie within this range. Separate ranges of user dialog IDs must be defined for incoming and outgoing dialogs.

**base\_usr\_icdlg\_id**

The base user dialog ID for user dialog IDs assigned by the IS41 module to incoming dialogs. The IS41 module uses values in the range base\_icdlg\_id to (**base\_icdlg\_id** + **nic\_dialogues** - 1) for this purpose. Separate ranges of user dialog IDs must be defined for incoming and outgoing dialogs.

**base\_tc\_ogdlg\_id**

The base dialog ID for outgoing dialogs between IS41 and TCAP. The subsequent (**nog\_dialogues** - 1) dialog IDs will also be handled by the module. The IS41 module allocates the dialog ID for each outgoing TCAP dialog. It uses values in the range **base\_tc\_ogdlg\_id** to (**base\_tc\_ogdlg\_id** + **nog\_dialogues** - 1) for this purpose. Separate ranges of TCAP dialog IDs must be defined for incoming and outgoing dialogs.

**base\_tc\_icdlg\_id**

The first dialog ID for incoming dialogs between TCAP and IS41. The subsequent (**nic\_dialogues** - 1) dialog IDs will also be handled by the module. TCAP allocates the dialog ID for each incoming dialog. It must use values in the range **base\_tc\_icdlg\_id** .... (**base\_tc\_icdlg\_id** + **nic\_dialogues** - 1) for this purpose. Separate ranges of TCAP dialog IDs must be defined for incoming and outgoing dialogs.

**nog\_dialogues**

The maximum number of simultaneous outgoing dialogs that the module is required to support. This value is compared with a compile time constant to ensure that the module has sufficient internal resources to handle the requested maximum number of outgoing dialogs.

**nic\_dialogues**

The maximum number of simultaneous incoming dialogs that the module is required to support. This value is compared with a compile time constant to ensure that the module has sufficient internal resources to handle the requested maximum number of incoming dialogs.

**num\_invokes**

The maximum number of simultaneous invocations that the module is required to support. This value is compared with a compile time constant to ensure that the module has sufficient internal resources to handle the requested number of simultaneous invocations.

**options**

Run time options assigned according to the following table:

Bit	Mnemonic	Description
0	IS41F_SEGMENTATION	Enables use of long messages
1	IS41F_NO_INVOKE_ID_CLASS4_MSGS	Class 4 messages can exclude Invoke Id

**error\_offset**

This field is used to identify configuration errors. The module ignores this field on reception of the message, but sets the field in the message confirmation (0x37b4) if an error in the configuration is found (in this situation the status field will also be set to a non-zero value). The error\_offset field gives the octet offset to the field in the message's parameter area which caused the configuration to be rejected.

## 6.2 IS41 Network Context Configuration

### Synopsis:

Message used to configure additional Network Contexts (after Network Context 0 implicitly defined by the IS41\_MSG\_CONFIG message) for use by the IS41 module.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_NC_CONFIG (0x77be)	
id	Network Context ID (value 1 to 3)	
src	Sending module_id	
dst	IS41_TASK_ID	
rsp_req	Used to request a confirmation	
hclass	0	
status	0	
err_info	0	
len	40	
PARAMETER AREA		
Offset	Size	Name
0	1	cnf_ver
1	1	user_id
2	1	tcap_id
3	2	Options
5	35	Reserved

### Description:

This message is used to configure the IS41 protocol timers for operation. It should be sent to the module before any protocol messages are sent or received. It should only be issued once.

### Confirmation Message:

The module sending the message can optionally request that a confirmation message be returned by the IS41 module after the message has been processed. This is achieved by setting the **rsp\_req** field in the message header. This will cause a confirmation message of the same format to be returned. See Appendix B, [Message Type reference](#). The status field in this message is zero on success or an error code otherwise.

**Parameter Description:**

**Network Context ID**

Identifies the Network Context (NC) being defined. Up to four NC definitions are currently allowed by the module. For this message the NC ID can be set to a value from 1 to 3, since the default NC (NC = 0) is implicitly defined by the IS41\_MSG\_CONFIG message.

**cnf\_ver**

Version of message (version 0 is the only format currently recognized).

**user\_id**

User application module ID for this NC

**tcap\_id**

TCAP module ID for this NC

**options**

Run time options assigned to this NC according to the options table defined for the IS41\_MSG\_CONFIG message in [Appendix B, Message Type reference](#). However, the IS41F\_SEGMENTATION is ignored if set in this message (the flag for NCO applies to all NCs).

## 6.3 IS41 Timer Configuration Request

### Synopsis:

Message used to set up default protocol parameters for use by the IS41 module.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_CNF_TIM (0x77b5)	
id	0	
src	Sending module_id	
dst	IS41_TASK_ID	
rsp_req	Used to request a confirmation	
hclass	0	
status	0	
err_info	0	
len	3	
PARAMETER AREA		
Offset	Size	Name
0	2	t0

### Description:

This message is used to configure the IS41 protocol timers for operation. It should be sent to the module before any protocol messages are sent or received. It should only be issued once.

### Confirmation Message:

The module sending the message can optionally request that a confirmation message be returned by the IS41 module after the message has been processed. This is achieved by setting the **rsp\_req** field in the message header. This will cause a confirmation message of the same format to be returned. See [Appendix B, Message Type reference](#). The **status** field in this message is zero on success or an error code otherwise.

### Parameter Description:

#### t0

Timer waiting for a response from the user application. Minimum value 5 seconds. (If the Configure Timers message is not sent, a default value of 5 seconds will be used.)

## 6.4 IS41 Transparency Configuration Request

### Synopsis:

Message used to configure the list of operations that must be transparently passed through by the IS41 module.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_CNF_TRANSP_OP (0x77bc)	
id	0	
src	Sending module_id	
dst	IS41_TASK_ID	
rsp_req	Used to request a confirmation	
hclass	0	
status	0	
err_info	0	
len	1 + 6 * number of operations that must be transparently passed through	
PARAMETER AREA		
Offset	Size	Name
0	1	cnf_ver
6 * j + 1	1	op_spec - operation specifier, valid range is [0...223].
6 * j + 2	1	priority - MTP priority associated with this operation
6 * j + 3	1	class - TCAP class associated with this operation
6 * j + 4	1	permission_req - TCAP release permission for this operation in TRANSPARENCY-REQ
6 * j + 5	1	permission_rsp - TCAP release permission for this operation in TRANSPARENCY-RSP
6 * j + 6	1	parent - operation can be a parent of linked operations

### Description:

This message is used to configure the list of operations that must be transparently passed through by the IS41 module. It should be sent to the module before any protocol messages are sent or received.

If this message is issued more than once, the operations specified in the successive messages will be appended to the list of operations that must be transparently passed through. This appending mechanism also allows specifying the operations one by one.

If no parameter is provided in this message or if the **cnf\_ver** parameter is provided alone (i.e.: **len** is 0 or 1), then the list of operations that must be transparently passed through is cleared.

Any operation specified using this message will be transparently passed through, even if the IS41 module supports this operation by means of service primitives.

#### **Confirmation Message:**

The module sending the message can optionally request that a confirmation message be returned by the IS41 module after the message has been processed. This is achieved by setting the **rsp\_req** field in the message header. This will cause a confirmation message of the same format to be returned. The **status** field in this message is zero on success or an error code otherwise.

#### **Parameter Description:**

##### **cnf\_ver**

Version of this configuration message. (Currently only version zero).

The following 6 parameters have to be repeated for all operation that must be transparently passed through. The offsets for the first operation vary from 1 to 6; they vary from 7 to 12 for the second operation...and from  $6*j+1$  to  $6*j+6$  for the  $j^{\text{th}}$  operation.

##### **op\_spec**

The specifier of the operation that must be transparently passed through. The valid range is [0...223]. Refer to section 6.4.1.2 in TIA/EIA-41.5-D and subsequent specifications.

##### **priority**

The MTP priority associated with the operation. This parameter is used to set the value of the Message Priority Octet in the **TCPN\_QOS** parameter of dialog requests sent to TCAP. Refer to section 5.1.1 in TIA/EIA-41.5-D and subsequent specifications, and to section 5.8 in the Dialogic® SS7 Protocols TCAP Programmer's Manual.

##### **class**

The TCAP class associated with the operation. This parameter is used to set the value of the **TCPN\_CLASS** parameter in component requests sent to TCAP. Refer to section 5.6 in the Dialogic® SS7 Protocols TCAP Programmer's Manual.

##### **permission\_req**

The TCAP release permission associated with the operation in requests (Invoke components). This parameter is used to set the value of the **TCPN\_PERMISSION** parameter in dialog requests sent to TCAP. Refer to section 6.4.1.3 in TIA/EIA-41.5-D and subsequent specifications, and to section 5.8 in the Dialogic® SS7 Protocols TCAP Programmer's Manual.

**permission\_rsp**

The TCAP release permission associated with the operation in responses (Return Result, Return Error and Reject components). This parameter is used to set the value of the **TCPN\_PERMISSION** parameter in dialog requests sent to TCAP. Refer to section 6.4.1.3 in TIA/EIA-41.5-D and subsequent specifications, and to section 5.8 in the Dialogic® SS7 Protocols TCAP Programmer's Manual.

**parent**

A flag indicating whether the operation can be a parent of linked operations. If that's the case, set this parameter to 1, otherwise set it to 0.

## 6.5 IS41 Software Event Indication

### Synopsis:

Message used by the IS41 module to indicate an implementation specific software related event to the local management module.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_ERROR_IND (0x07b9)	
id	See below	
src	IS41_TASK_ID	
dst	Management module ID	
rsp_req	Used to request a confirmation	
hclass	0	
status	Software event code (see below)	
err_info	0	
len	0	
PARAMETER AREA		
Offset	Size	Name
0	2	mt - message type
2	1	pt - primitive type
3	1	pn - parameter name

### id field

The value contained in the **id field** of the message is the same as in the **id field**, either from received message, or from message that would have been sent if no error occurred. In most cases, this is the dialog ID.

### Software event code

The **Software event code** contained in the **status** field of the message indicates the type of event. Possible values are listed in the following table which also lists the parameters contained in the parameter area, where:

- **mt** is the message type: type field, either from received message, or from message that would have been sent if no error occurred;
- **pt** is the primitive type: first byte in the parameter area, either from received message, or from message that would have been sent if no error occurred;
- **pn** is the name (either IS41PN\_\* or TCPPN\_\*) of the parameter for which the error occurred.

Mnemonic	Code	Parameters	Description
IS41SWE_NO_MSSM	1	mt	Maximum number of active invocations exceeded.
IS41SWE_NO_DLG	2	mt	No internal resource to handle dialog.
IS41SWE_NO_ISM	3	mt	Internal pool of structured messages exhausted.
IS41SWE_ISM_LOW	4	mt	Internal pool of structured messages running low.
IS41SWE_BAD_MSG	5	mt	Unrecognized inter task message received.
IS41SWE_TX_FMT_ERR	6	mt, pt	Internal error during message formatting.
IS41SWE_USER_BAD_FMT	7	mt, pt	Badly formatted message received from user application.
IS41SWE_TCAP_BAD_FMT	8	mt, pt	Badly formatted IS41 message received from TCAP.
IS41SWE_UNREC_TYPE	9	mt	Unrecognized IS41 message received from TCAP.
IS41SWE_INVALID_DLG_ID	10	mt	Message received from TCAP or user application with unrecognized dialog ID
IS41SWE_USER_MAND_MISSING	11	mt, pt, pn	Missing mandatory parameter in message from user application
IS41SWE_TCAP_MAND_MISSING	12	mt, pt, pn	Missing mandatory parameter in message from TCAP
IS41SWE_BAD_USER_PRIM	13	mt, pt	Unknown primitive received from user application
IS41SWE_BAD_TCAP_PRIM	14	mt, pt	Unknown primitive received from TCAP
IS41SWE_USER_PAR_FMT_ERR	15	mt, pt, pn	Formatting error in a parameter received from user application
IS41SWE_TCAP_PAR_FMT_ERR	16	mt, pt, pn	Formatting error in a parameter received from TCAP
IS41SWE_USER_UNREC_PARAM	17	mt, pt, pn	Unrecognized parameter received from user application

## 6.6 IS41 Trace Mask Request

### Synopsis:

Message used to configure IS41 to send a trace message to the trace module whenever a specific message type is sent or received. The trace module is identified in the IS41 configuration request message.

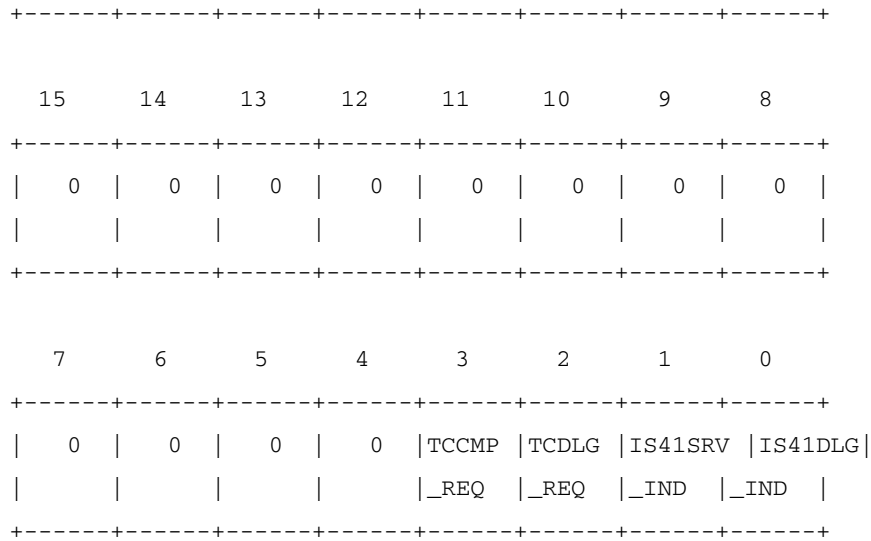
### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_TRACE_MASK (0x57b6)	
id	0	
src	Sending module ID	
dst	IS41_TASK_ID	
rsp_req	Used to request a confirmation	
hclass	0	
status	0	
err_info	0	
len	12	
PARAMETER AREA		
Offset	Size	Name
0	4	op_evt_mask - Output event trace mask
4	4	ip_evt_mask - Input event trace mask
8	4	non_prim_mask - Non-primitive trace mask

### op\_evt\_mask

The output event trace mask. This is a 32-bit value with bits set to 1 to cause a trace message to be sent to the system trace module when the IS41 module sends the associated protocol message.

31	30	29	28	27	26	25	24				
+-----+-----+-----+-----+-----+-----+-----+-----+											
	0		0		0		0		0		0
+-----+-----+-----+-----+-----+-----+-----+-----+											
				23	22	21	20	19	18	17	16
+-----+-----+-----+-----+-----+-----+-----+-----+											
	0		0		0		0		0		0



IS41DLG\_IND – Dialog indication primitive from the IS41 module to user application

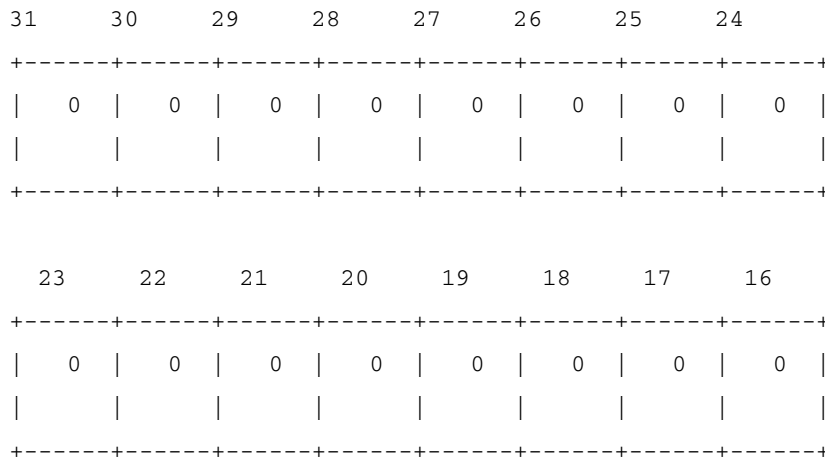
IS41SRV\_IND – Service indication primitive from the IS41 module to user application

TCDLG\_REQ – Dialog request primitive from the IS41 module to TCAP

TCCMP\_REQ – Component request primitive from the IS41 module to TCAP

**ip\_evt\_mask**

The input event trace mask. This is a 32-bit value with bits set to 1 to cause a trace message to be sent to the system trace module when the IS41 module receives the associated protocol message.



15	14	13	12	11	10	9	8
0	0	0	0	0	0	0	0
7	6	5	4	3	2	1	0
0	0	0	0	TCCMP	TCDLG	IS41SRV	IS41DLG
				_IND	_IND	_REQ	_REQ

IS41DLG\_REQ – Dialog request primitive from user application to the IS41 module

IS41SRV\_REQ – Service request primitive from user application to the IS41 module

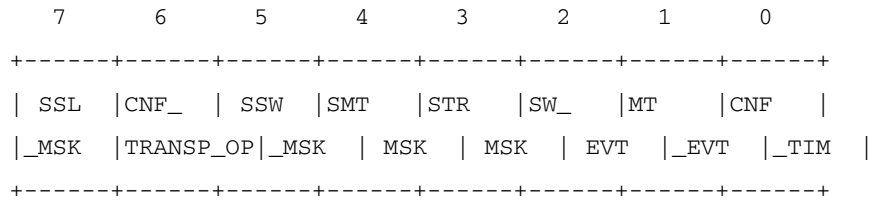
TCDLG\_IND – Dialog Indication primitive from TCAP to the IS41 module

TCCMP\_IND – Component Indication primitive from TCAP to the IS41 module

**non\_prim\_mask**

The non-primitive trace mask. This is a 32-bit value with bits set to 1 to cause a trace message to be sent to the system trace module when the IS41 module receives the associated non-primitive message.

31	30	29	28	27	26	25	24
0	0	0	0	0	0	0	0
23	22	21	20	19	18	17	16
0	0	0	0	0	0	0	0
15	14	13	12	11	10	9	8
0	0	0	0	0	0	0	0



- CNF\_TIM – Timer Configuration Message received by the IS41 module
- MT\_EVT – Maintenance Event indication message sent by the IS41 module to the maintenance module.
- SW\_EVT– Software Error Event indication message sent by the IS41 module to the management module.
- STR\_MSK – Trace Mask Request message received by the IS41 module.
- SMT\_MSK- Maintenance Mask Request message received by the IS41 module.
- SSW\_MSK- Error Mask Request message received by the IS41 module.
- CNF\_TRANSP\_OP – Transparency Configuration message received by the IS41 module.
- SSL\_MSK - Set Selective Trace Mask Request message received by the IS41 module.

## 6.7 Set Selective Trace Mask Request

### Synopsis:

Enables extra information to be reported along with selected software events for debug purposes.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_S_SELTRACE_MASK (0x57bd)	
id	0	
src	Sending module ID	
dst	IS41_TASK_ID	
rsp_req	Used to request a confirmation	
hclass	0	
status	0	
err_info	0	
len	9	
PARAMETER AREA		
Offset	Size	Name
0	9	mask - Bits set to indicate selective trace events which should be active

### Description:

Sends a mask indicating which selective trace events should be active. No selective trace events are active when the module is initialized. This message can be used to turn on some or all selective trace events or turn them back off again. The message may be sent at any time after the initial per-module configuration message has been sent to the IS41 module.

### mask

A bit mask indicating the selective trace events which are active. A "1" indicates that an event is active and a "0" indicates that it is not active. The first octet sent is for selective trace event codes 0-7, the second octet for selective trace event codes 8-15, etc. See section 6.9, [Selective Trace Event Indication](#) for the list of events that may be traced.

## 6.8 Trace Event Indication

### Synopsis:

The IS41 trace event masks are used to enable and disable tracing of all protocol and non primitive messages received or sent by the IS41 module. The traced messages are reported as event indications as shown below:

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	MGT_MSG_TRACE_EV (0x0003)	
id	0	
src	IS41_TASK_ID	
dst	Trace module ID	
rsp_req	0	
hclass	0	
status	0	
err_info	0	
len	18 + length of traced data	
PARAMETER AREA		
Offset	Size	Name
0	1	source module ID
1	1	destination module ID
2	2	id
4	2	type
6	2	status
8	4	timestamp
12	4	pointer to the message being traced
16	2	data length
18	0 ... 280	data - Data taken from the contents of the MSG parameter area.

## 6.9 Selective Trace Event Indication

### Synopsis:

Optionally provides extra information to be reported along with selected software and maintenance events for debug purposes.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	MGT_MSG_SEL_TRACE (0x0f16)	
id	0	
src	IS41_TASK_ID	
dst	Trace module ID	
rsp_req	0	
hclass	0	
status	Reason for trace	
err_info	0	
len	18 + length of traced data	
PARAMETER AREA		
Offset	Size	Name
0	1	source module ID
1	1	destination module ID
2	2	id
4	2	type
6	2	status
8	4	timestamp
12	4	pointer to the message being traced
16	2	data length
18	0.. 280	contents of the MSG parameter area.

### Description:

When certain software events are reported the module may be configured to also send, to the trace module, a Selective Trace Event Indication containing the message that caused the report to be made.

The reason for trace contained in the status field of the message indicates the type of event. Possible values are listed in the following table:

Status	Mnemonic	Description
0	IS41t_tx_fmt_err	Refer to IS41SWE_TX_FMT_ERR
1	IS41t_user_bad_fmt	Refer to IS41SWE_USER_BAD_FMT
2	IS41t_tcap_bad_fmt	Refer to IS41SWE_TCAP_BAD_FMT
3	IS41t_unrec_type	Refer to IS41SWE_UNREC_TYPE
4	IS41t_invalid_dlg_id	Refer to IS41SWE_INVALID_DLG_ID
5	IS41t_user_mand_missing	Refer to IS41SWE_USER_MAND_MISSING
6	IS41t_tcap_mand_missing	Refer to IS41SWE_TCAP_MAND_MISSING
7	IS41t_bad_user_prim	Refer to IS41SWE_BAD_USER_PRIM
8	IS41t_bad_tcap_prim	Refer to IS41SWE_BAD_TCAP_PRIM
9	IS41t_user_par_fmt_err	Refer to IS41SWE_USER_PAR_FMT_ERR
10	IS41t_tcap_par_fmt_err	Refer to IS41SWE_TCAP_PAR_FMT_ERR
11	IS41t_user_unrec_param	Refer to IS41SWE_USER_UNREC_PARAM

## 6.10 IS41 Maintenance Mask Request

### Synopsis:

Message used to configure the maintenance events for which the IS41 module will send a maintenance event indication message for.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_S_MAINT_MASK (0x57b8)	
id	0	
src	Sending module ID	
dst	IS41_TASK_ID	
rsp_req	Used to request a confirmation	
hclass	0	
status	0	
err_info	0	
len	9	
PARAMETER AREA		
Offset	Size	Name
0	9	mask

### mask

A bit mask indicating the maintenance events which are active. A "1" indicates that an event is active and a "0" indicates that is not active. The first octet sent is for maintenance event codes 0-7, (bit 0 for event code 0) the second octet for maintenance event codes 8-15, (bit 0 for event code 8) etc.

Pad unused bits with zeros.

No maintenance events are currently defined.

## 6.11 IS41 Software Event Mask Request

### Synopsis:

Message used to configure software error events for which IS41 will send a software event indication message.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	IS41_MSG_S_ERROR_MASK (0x57b7)	
id	0	
src	Sending module ID	
dst	IS41_TASK_ID	
rsp_req	Used to request a confirmation	
hclass	0	
status	0	
err_info	0	
len	9	
PARAMETER AREA		
Offset	Size	Name
0	9	mask

### mask

A bit mask indicating the software events which are active. A "1" indicates that an event is active and a "0" indicates that is not active. The first octet sent is for software event codes 0-7 (bit 0 for event code 0), the second octet for software event codes 8-15 (bit 0 for event code 8), etc.

Pad unused bits with zeros.

All software events currently reported in the IS41\_MSG\_ERROR\_IND message detailed in section 6.5, [IS41 Software Event Indication](#) are enabled by default.

## 6.12 Read Revision Request

### Synopsis:

This message is provided to request a reply indicating the software version of the IS41 module.

### Message Format:

MESSAGE HEADER		
Field Name	Meaning	
type	GEN_MSG_MOD_IDENT (0x6111)	
id	0	
src	Originating Module ID	
dst	IS41_TASK_ID	
rsp_req	Sending layer's bit must be set	
hclass	0	
status	0	
err_info	0	
len	28	
PARAMETER AREA		
Offset	Size	Name
0	2	type
2	1	max_rev
3	1	min_rev
4	24	text

### Description:

The parameter area should be set to all zeros by the sender. The parameter area of the reply message is filled by the IS41 module.

#### type

Currently undefined.

#### max\_rev

Software Major Version number.

#### min\_rev

Software Minor Version number.

#### text

Module identity text (a null terminated string).

## Appendix A. Tick Timer message format

The IS41 module requires a periodic "tick timer" message. This must be sent at the required frequency, nominally every tenth of a second.

The format of the required message is shown below:

MESSAGE HEADER		
Field Name	Meaning	
type	TM_EXP (0xc002)	
id	Index to timer table	
src	Sending module ID	
dst	IS41_TASK_ID	
rsp_req	0	
class	0	
status	0	
err_info	0	
len	4	
PARAMETER AREA		
Offset	Size	Name
0	4	Timer type

## Appendix B. Message Type reference

The following table lists, by message type, the messages described in this manual.

Value	Mnemonic	Description
0xc7b2	IS41_MSG_DLG_REQ	Used to send a dialog request from the user to the IS41 module.
0x87b3	IS41_MSG_DLG_IND	Dialog message indication sent from the IS41 module to the user.
0xc7b0	IS41_MSG_SRV_REQ	Used to send a service request from the user to the IS41 module.
0x87b1	IS41_MSG_SRV_IND	Service request message indication sent from the IS41 module to the user.
0x77b4	IS41_MSG_CONFIG	Used to configure the IS41 module
0x77be	IS41_MSG_NC_CONFIG	Defines and configures a Network Context
0x77b5	IS41_MSG_CNF_TIM	Configures timer values
0x77bc	IS41_MSG_CNF_TRANSP_OP	Configures the list of operations that must be transparently passed through.
0x07b9	IS41_MSG_ERROR_IND	Used to indicate a software related event to the local management module
0x07ba	IS41_MSG_MAINT_IND	Maintenance message sent to the Maintenance module
0x57b6	IS41_MSG_TRACE_MASK	Used to configure module message tracing
0x57b8	IS41_MSG_S_MAINT_MASK	Used to configure maintenance event tracing
0x57b7	IS41_MSG_S_ERROR_MASK	Used to configure software event tracing
0x57bd	IS41_MSG_S_SELTRACE_MASK	Used to configure selective tracing
0x6111	GEN_MSG_MOD_IDENT	Requests module software revision information

Note: For more information on the MSG message structure, see Appendix A of the Dialogic® Distributed Signaling Interface Components - Software Environment Programmer's Manual.