

Binary for Linux – IS41

Release Notes for Version 4.00

1. Overview

This release expands IS41 to support Long Messages for the support of SCCP Segmentation and Reassembly procedures.

This is the first release since V3.01 and is backwards compatible with that release. This release is developed for use with the SS7 Development Package for Linux V5.00 or later. It cannot be used with earlier development packages.

Customers who wish to make use of the Long Message support offered in V5.00 of the development package should upgrade to this release of software (Long Message support is required for SCCP Segmentation). In addition the customer should upgrade to SCCP for Linux V3.00 or later and TCAP for Linux V6.00 or later. Other customers need not upgrade.

2 New functionality

2.1 Support for Long Messages

Starting with this release, IS41 now supports the generation and reception of long TCPPN_COMPONENT (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 (0x0001) flag of the option field of IS41_MSG_CONFIG (0x77b4) must be set and the GCT environment must be set up to handle long messages.

See ga237sss.pdf for more details on the new encoding scheme allowing supporting parameters longer than 255 bytes in the IS41 to TCAP interface.

The maximum size of the following parameters has been increased up to 255 bytes when the IS41F_SEGMENTATION flag has been set the GCT environment setup to support large messages:

IS41PN_callingPartySubAddress,
IS41PN_redirectingSubAddress
IS41PN_featureIndicator,
IS41PN_failureCause,
IS41PN_displayText,
IS41PN_callStatus,
IS41PN_DMHServiceID,
IS41PN_announcementList,

IS41PN_terminationList,
IS41PN_triggerAddressList,
IS41PN_ellipsis.

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 at present.

If the IS41 module has not been configured to support large message (IS41F_SEGMENTATION flag not set), the maximum size of the above parameters is kept unchanged.

The IS41 module will fail to initialize if it is configured to support large message but the GCT environment has not been configured to support them.

2.2 Use of Linux shared object

This release makes use of shared object version of the GCT library included in V5.00 of the development package.

2.3 Additional error report in IS41_MSG_CONFIG confirmation

In order to simplify the identification of configuration errors IS41_MSG_CONFIG (0x77b4) now supports one extra field, error_offset (IS41MO_CONFIG_error_offset=24).

The module ignores this field on reception of the IS41_MSG_CONFIG message but sets the field in the IS41_MSG_CONFIG 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 information about the byte offset of the parameter area in IS41_MSG_CONFIG which causes the configuration to fail. In order to do this the IS41_MSG_CONFIG message length must be long enough, i.e. at least 26 bytes. There is no change of operation when IS41_MSG_CONFIG length is less than 26 bytes.

Dialogic
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Binary for Linux – IS41

Release Notes for Version 4.01

1. Overview

This release adds a new module option that allows Class 4 services to send and receive messages to TCAP with a zero length Invoke Id field.

This release is backwards compatible with the previous release.

2 Changes

2.1 New option for Invoke Ids for Class 4 services

Class 4 services may now optionally send and receive messages, to TCAP, with a zero length Invoke Id field. This feature allows the module to be compatible with other IS41 providers that support this functionality.

To enable this functionality, a new per module option, IS41F_NO_INVOKE_ID_CLASS4_MSGS (bit 1), has been added to the <options> field in the Configure Request message (0x77b4). This option is also applicable to the <option> field for the Network Context Configuration message, IS41_MSG_NC_CONFIG (0x77be).

When the option is enabled, the user need not provide an Invoke Id parameter when requesting a Class 4 service. The module will add an Invoke Id tag with zero length to the ASN.1 component sent to TCAP (ANSI). Similarly, the module will accept TCAP messages that have an ASN.1 Invoke Id tag with zero length if the service is Class 4. The service message sent to the user then has no Invoke Id parameter.

When the option is not enabled, the Invoke Id parameter is mandatory for all services regardless of the service's configuration of the parameter and a Software Event Indication (0x07b9) with status IS41SWE_USER_MAND_MISSING (0x0b) will be reported if it is not present in the message.

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Release Notes for Version 4.02

1. Overview

This release provides support for the MSID (Mobile Station Identity) parameter, a choice of either Mobile Identification Number (MobileIdentificationNumber) or International Mobile Station Identity (IMSI) parameter as defined in standard TIA-751.

This release is backwards compatible with the previous release.

2. New functionality

The following 5 operations now support the IMSI parameter in conjunction with the already supported MobileIdentificationNumber parameter:

- SMS Delivery Backward
- SMS Delivery Forward
- SMS Delivery Point-to-Point
- SMS Notification
- SMS Request

The following tables show the parameters associated with each of these 5 service request primitives 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.

IS41-SMS-DELIVERY-BACKWARD-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
InterMSCCircuitID	M
MobileIdentificationNumber ¹	C
IMSI ¹	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

¹ One of the parameters MobileIdentificationNumber or IMSI must be present.

IS41-SMS-DELIVERY-FORWARD-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
InterMSCCircuitID	M
MobileIdentificationNumber ¹	C
IMSI ²	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

¹ One of the parameters MobileIdentificationNumber or IMSI must be present.

IS41-SMS-DELIVERY-POINT-TO-POINT-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
SMS_BearerData	M
SMS_TeleserviceIdentifier	M
ElectronicSerialNumber	O
MobileIdentificationNumber ¹	O
IMSI ³	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

¹ One of the parameters MobileIdentificationNumber or IMSI may optionally be present.

IS41-SMS-NOTIFICATION-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
ElectronicSerialNumber	O
MobileIdentificationNumber ¹	C
IMSI ⁴	C
SMS_AccessDeniedReason	O
SMS_Address	O
qos	O
Timeout	O
Ellipsis	O

IS41-SMS-REQUEST-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
MobileIdentificationNumber ²	C
IMSI ⁵	C
ElectronicSerialNumber	O
SMS_NotificationIndicator	O
SMS_TeleserviceIdentifier	O
qos	O
Timeout	O
Ellipsis	O

¹ One of the parameters MobileIdentificationNumber or IMSI must be present.

² One of the parameters MobileIdentificationNumber or IMSI must be present.

3. Faults cleared

3.1 Incorrect type for “MobileIdentificationNumber” parameter in SMS Notification operation

In previous releases, the MobileIdentificationNumber parameter in the SMS Notification operation was defined as optional instead of mandatory. This operation now takes a mandatory choice of either MobileIdentificationNumber or IMSI as defined in Section 2.

Dialogic
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Release Notes for Version 4.03

1. Overview

This release adds support for MDN Based Message Centers and is backwards compatible with the previous release.

2. New functionality

2.1 Support for MDN – Message Centers

The SMS Request operation now supports MDN Based Message Centers.

The following table show the parameters associated with this service request primitive and shows 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.

IS41-SMS-REQUEST-REQ	
Parameter	Class
Primitive type octet	M
Invoke ID	M
MobileIdentificationNumber ⁶	C
IMSI ⁶	C
MobileDirectoryNumber	O
ServiceIndicator	O
ElectronicSerialNumber	O
SMS_NotificationIndicator	O
SMS_TeleserviceIdentifier	O
qos	O
Timeout	O
Ellipsis	O

⁶Both MobileIdentificationNumber or IMSI are optional.

2.2 New ServiceIndicator Parameter

The ServiceIndicator parameter is now supported as defined in 6.5.2.wB in *3GPP2 N.S0011-0*.

Parameter name	IS41PN_serviceIndicator 0x99
Parameter length	Variable, typically 1.
Parameter data	Type of Service: 1. CDMA OTASP 2. TDMA OTASP 3. CDMA OTAPA

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Release Notes for Version 4.04

1. Overview

This release expands the IS41 module to support the ServiceRequest operation as defined in the 3GPP2 X.S0010-A v1.0 standard. The service is also compatible with the 3GPP2 MAP standards X.S0004-540-E v2.0 and X.S0004-550-E v2.0.

This release is backwards compatible with the previous release.

2. New functionality

2.1 Support for Service Request

The Service Request operation is now supported by the IS41 module.

The Service Primitive Types for the new service are as follows:

1. Primitives sent by the User:

Primitives	Mnemonic	Value (Dec) (Hex)	
IS41_SERVICE_REQUEST_REQ	IS41ST_SERVICEREQ_REQ	20	0x14
IS41_SERVICE_REQUEST_RSP	IS41ST_SERVICEREQ_RSP	148	0x94

2. Primitives received by the User:

Primitive	Mnemonic	Value (Dec) (Hex)	
IS41_SERVICE_REQUEST_IND	IS41ST_SERVICEREQ_IND	20	0x14
IS41_SERVICE_REQUEST_CNF	IS41ST_SERVICEREQ_CNF	148	0x94

The following tables show the parameters associated with the service request primitives and show whether each parameter is Mandatory (M), Conditional (C) or Optional (O).

The parameters defined for the service allow valid messages to be defined for multiple IS41 derived standards. Users must ensure that only parameters compatible with the required standards are used.

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
CallingPartyNumberDigits1	O
CallingPartySubaddress	O
CarrierDigits	O
CDMAServiceOption	O
ConditionallyDeniedReason	O
DataAccessElementList	O
DestinationDigits	O
Digits	O
DMH_RedirectionIndicator	O
DMH_ServiceID	O
ESN (ElectronicSerialNumber)	O
ExtendedMSCID	O
FeatureIndicator	O
GroupInformation	O
LegInformationm	O
LocationAreaID	O
MobileDirectoryNumber	O
MSCID	O
MSCIdentificationNumber	O
MobileIdentificationNumber ¹	C
IMSI	C
PC_SSN	O
PilotBillingID	O

¹ One of the parameters MobileIdentificationNumber or IMSI may optionally be present.

IS41-SERVICE-REQUEST-REQ	
Parameter	Class
PilotNumber	O
PreferredLanguageIndicator	O
RedirectingPartyName	O
RedirectingNumberDigits	O
RedirectingSubaddress	O
RedirectingReason	O
RoutingDigits	O
SenderIdentificationNumber	O
ServingCellID	O
SystemMyTypeCode	O
TDMAServiceCode	O
TerminationAccessType	O
TimeDateOffset	O
TimeOfDay	O
TransactionCapability	O
TriggerType	O
WINCapability	O
QOS	O
Timeout	O
Ellipsis	O

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

IS41-SERVICE-REQUEST-ACK	
Parameter	Class
DisplayText ¹	C
DisplayText2 ¹	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

New Parameters

Ten new parameters are added to the IS41 module to support the ServiceRequest operation.

Parameter	Mnemonic	Value (Dec) (Hex)	
ServiceID	IS41PN_serviceID	100	0x64
AvailabilityType	IS41PN_availabilityType	101	0x65
ConditionallyDeniedReason	IS41PN_conditionallyDeniedReason	102	0x66
DataAccessElementList	IS41PN_dataAccessElementList	103	0x67

¹ One of the parameters DisplayText or DisplayText2 may optionally be present.

Parameter	Mnemonic	Value (Dec) (Hex)	
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

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

Parameter name	IS41PN_serviceID 0x64
Parameter length	Variable.
Parameter data	Encoded as specified in N.S0012-0 [6.5.2.bz]

Parameter name	IS41PN_availabilityType 0x65
Parameter length	Fixed, set to 1 (additional octets ignored).
Parameter data	Encoded as specified in TIA/EIA-41.5-D [6.5.2.15]

Parameter name	IS41PN_conditionallyDeniedReason 0x66
Parameter length	Fixed, set to 1.
Parameter data	Encoded as specified in TIA/EIA-41.5-D [6.5.2.48]

Parameter name	IS41PN_dataAccessElementList 0x67
Parameter length	Variable.
Parameter data	Encoded as specified in TIA/EIA/IS-771 [6.5.2.cd]

Parameter name	IS41PN_extendedMSCID 0x68
Parameter length	Fixed, set to 4.
Parameter data	Encoded as specified in TIA/EIA-41.5-D [6.5.2.64]

Parameter name	IS41PN_alertCode 0x69
Parameter length	Fixed, set to 2 (additional octets ignored).
Parameter data	Encoded as specified in TIA/EIA-41.5-D [6.5.2.3]

Parameter name	IS41PN_DMHChargeInformation 0x6a
Parameter length	Variable.
Parameter data	Encoded as specified in N.S0004-0 [6.5.2.eo]

Parameter name	IS41PN_CDMAServiceOption 0x6b
Parameter length	Fixed, set to 2 (additional octets ignored).
Parameter data	Encoded as specified in N.S0006-0 [6.5.2.f]

Parameter name	IS41PN_TDMAServiceCode 0x6c
Parameter length	Fixed, set to 1 (additional octets ignored).
Parameter data	Encoded as specified in N.S0006-0 [6.5.2.i]

Parameter name	IS41PN_displayText2 0x6d
Parameter length	Variable, minimum 5 octets.
Parameter data	Encoded as specified in N.S0015-0 [6.5.2.ec]

Dialogic
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Binary for Linux – IS41

Release Notes for Version 4.05

1. Overview

This release enhances support for user defined Transparency functionality to allow component parameters to be longer than 255 octets. The release also reports when unexpected messages are received from the user.

The use of trial mode is now limited to one hour. In other respects this release is backwards compatible with the previous release.

2. New functionality

2.1 Transparent Component parameters exceeding 255 octets

The Transparency feature allows user applications to send and receive components that are simply passed transparently by the IS41 module. This allows operations that are not supported by the IS41 module to be implemented and also allows addition of new components to operations that are supported.

This release allows the length of the transparent component parameter (IS41PN_transp_component) to exceed 255 octets and extend up to a new maximum of 3,000 octets.

The use of longer parameters places a number of system-wide requirements on the user which must be adhered to as follows:

- The GCT environment must be set up to handle long messages (see DSI Software Environment Programmer's Manual Issue 7, Section 4.1.3).
- The IS41 module must be configured for long messages by setting the IS41F_SEGMENTATION option bit in the IS41_MSG_CONFIG message.

Note: In addition the SCCP and TCAP modules must also have similar configuration changes. This is covered in sections 2.1.1 and 2.1.2 below.

- The IS41PN_transp_component parameter is preceded by the new IS41PN_CODE_SHIFT parameter (set to 1), see below.

A new parameter is added for this release.

Primitive	Mnemonic	Value (dec)	Value (hex)
Code Shift	IS41PN_CODE_SHIFT	255	0xff
Parameter name	IS41PN_CODE_SHIFT		
Parameter length	Fixed, set to 1		
Parameter data	1 - Subsequent parameters use two octet length 0 - Subsequent parameters use single octet length		

The IS41PN_CODE_SHIFT parameter is used to indicate that all parameters following it use the specified 1 or 2 octet method of encoding length. Two octet parameter lengths are coded high octet first followed by low octet.

When transparent components greater than 255 octets in length are received from the network layer, the IS41PN_transp_component parameter is encoded with a 2 octet length and returned to the IS41-User preceded by the IS41PN_CODE_SHIFT parameter.

This change is applicable to transparent InvokeLast and ResponseLast components.

Note: Use of transparent component parameters greater than 255 octets in length may also require some internal length encodings within the parameter itself to be greater than 255 as per T1.114.3.

2.1.1 SCCP

To enable Large Message support and Segmentation/Reassembly the ext_options parameter of the SCCP configuration message (SCP_MSG_CONFIG 0x7740) should have the SCPXF_SEGMENTATION (0x0080) option set.

2.1.2 TCAP

To enable Large Message support the flags parameter of the configuration message (TCP_CONFIG_MSG 0x7780) should have the TCPF_SEGMENTATION (0x0100) option set. The max_data field in the TCP_MSG_CONFIG (0x7780) message should also be increased to allow longer a UNIT_DATA parameter to be sent to SCCP. If the max_data field value is not sufficient then the TCAP Maintenance Indication TCPEV_DATA_LEN_ERR will be generated.

2.2 Report unexpected user messages

This release provides additional diagnostic event indications to assist with detection of errors that previously were silently discarded.

The IS41 module will generate an IS41_MSG_ERROR_IND message to the management module whenever an unexpected message is received from the IS-41 User. A selective trace can also be enabled to be sent at the same time.

The Error and Trace messages are reported whenever a IS41_MSG_DLG_REQ or IS41_MSG_SRV_REQ message is received by the module and the message type or primitive type is not expected for the dialogs current state.

The event is reported to the IS41-User using the IS41_MSG_ERROR_IND message with the Software Event Code tabulated below set -

Mnemonic	Code	Parameters	Description
IS41SWE_USER_MSG_UNEXP	19	Message type	Unexpected message received from IS41-User

The event can also be reported using the Selective Trace message, the status field of the MGT_MSG_SEL_TRACE message is set to -

Status	Mnemonic	Description
13	IS41t_user_msg_unexp	Refer to IS41SWE_USER_MSG_UNEXP

Reporting of the event using the IS41_MSG_ERROR_IND message can be enabled and disabled using the IS41_MSG_S_ERROR_MASK message and the appropriate masking bit. Reporting of this event is enabled by default.

Tracing of the event using the MGT_MSG_SEL_TRACE message can be enabled and disabled using the IS41_MSG_S_SELTRACE_MASK message. Tracing of this event is disabled by default.

2.3 Trial Mode

When operating in trial mode (using the -t command line option), the period of operation is now restricted to one hour after which the binary will terminate.

3. Faults Cleared

3.1 Correction to Ellipsis parameter Handling

For previous releases there was a fault when processing network messages from TCAP. Invalid received parameter data could be returned to the IS41-User when there was more than one unknown

parameter tag in the received data. Unknown parameters are accumulated into the IS41PN_ellipsis parameter and returned to the user in raw tag, length, data format. This is corrected in this release.

Dialogic
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