Binary for Solaris – IS41

Release Notes for Version 3.00

1. Overview

This release introduces new WIN operations, new Transparency feature, support for ellipses in all operations and support for UNIDIRECTIONAL dialogues. Software error indication messages have been updated and selective tracing is now supported to provide additional diagnostic information. In additional to these new features, a number of issues have been corrected.

These release notes should be read in conjunction with the IS41 Programmer's Manual Issue 5.

This release is backwards compatible with the previous release with one exception as detailed in section 2.4.

2. New functionality

2.1 Support for new WIN operations

New WIN operations supported by the IS41 module are as follows: ORREQ, ANALYZD, CONNRES, DISCONNRES, CONNFAILRPT, CCDIR, BULKDISCONNECT, TNOANSWER, TBUSY, TANSWER, OANSWER, TDISCONNECT, ODISCONNECT.

Unidirectional dialogues are now also supported, through new IS41DT_UNI_REQ and IS41DT_UNI_IND primitives.

2.2 Transparency feature

The new Transparency feature allows User applications to send and parse themselves any operation, such as operations that are not yet supported by the IS-41 module. The list of operations that must be transparently passed through by the IS-41 module can be specified by means of the new Transparency Configuration request. Transparent operations are handled using four new service primitives: IS41ST_TRANSP_SRV_REQ, IS41ST_TRANSP_SRV_RSP, IS41ST_TRANSP_SRV_IND and IS41ST_TRANSP_SRV_CNF.

2.3 Add ellipsis in operations

The previous version of IS41 would not support the reception of extra (non supported) parameters in service requests and indications. This resulted in these parameters not being passed to the user application or to TCAP. A new parameter, IS41PN_ellipsis (0x61), has been added. Unknown parameters in operations received from TCAP will be

passed to the user application as an IS41PN_ellipsis parameter. The user application can also add an IS41PN_ellipsis parameter in a service request to use any unsupported parameters in supported operations.

Parameter name	IS41PN_ellipsis
Parameter length	Variable, in the range 2 to 220.
Parameter data	Series of parameters in tag, length, data format as defined by the users.

2.4 Improve IS41 fault diagnostic

When a problem occurred in IS41, there was not much diagnostic information given. New software event error codes have been added for “Unknown Primitives”, “Missing Mandatory Parameter” and “Unknown Parameter” (IS41SWE_USER_MAND_MISSING, IS41SWE_TCAP_MAND_MISSING, IS41SWE_BAD_USER_PRIM, IS41SWE_BAD_TCAP_PRIM, IS41SWE_USER_PAR_FMT_ERR, IS41SWE_TCAP_PAR_FMT_ERR, IS41SWE_USER_UNREC_PARAM, IS41SWE_TCAP_UNREC_PARAM.

Software events now also contain extra information, like the dialogue ID (in the id field), as well as the primitive type or the parameter type as appropriate. Refer to User Manuals for more information.

Note that, as some general software events codes have been replaced by more meaningful error codes, the module is not fully backwards compatible in this respect with the previous release: the application will receive for the same error conditions other software even codes, or, if the application only enabled the old software event codes, it would now miss some software event codes.

2.5 Selective tracing

A new selective tracing mechanism has been added. For certain maintenance and software events (e.g. when a badly formatted message is received) a trace of the message causing the event may now optionally be made. This allows for easier diagnosis of problems.

To activate the selective tracing, the user must format and send to IS41 the Set Selective Trace Mask request, setting the appropriate bits in the mask for the types of events that should produce a message trace. If the selected event occurs, a Selective Trace Event Indication, message will be sent to the module configured to receive these traces.

2.6 Improved timer configuration

The default timers for the SMS operations have been changed according to IS41-6. All timers can now also be changed by the application from 0 seconds to 1800 seconds.

The len parameter of the timer can now also be set to 0 to indicate to TCAP not to start a timer for this operation. This is needed for instance for operations which require unidirectional dialogues.

3. Faults cleared

3.1 Validation of the number of invokes configured

The maximum number of invokes specified in the Configure IS41 request message is now checked to ensure that it is not greater than the supported maximum. If an incorrect value is specified, the Configure IS41 request message will now be discarded and a status of “bad parameter” will be returned. Previously, no check was made which could occasionally cause the software to crash if an incorrect value was specified.

3.2 Indefinite length encoding

Handling of a message received with indefinite length encoding could occasionally cause problems if a zero length parameter was included. The message would not be decoded correctly and Provider error = 9 (invalid response received) would be included in the message sent to the application. This problem has now been corrected.

3.3 Internal signal overflow

When simultaneously handling a number of invokes the system may run out of internal resources. This has now been corrected.

3.4 IS41ML_CONFIG

The message definition for is41 main config message was missing. #define IS41ML_CONFIG 40 has been added in include file.

3.5 QoS Handling

If IS41 received a TCP_MSG_DLG_IND from TCAP with the TCPPN_QOS parameter set to other that 2 (Sequence control requested only), the message was discarded and a software event indication (IS41SWE_TCAP_BAD_FMT) was sent to user. This has been fixed.

3.6 User Abort from TCAP

IS41 now correctly handles formatted TCPPT_TC_U_ABORT indications with no parameters from the network.

Also, TCPPTA_TC_U_ABORT is now correctly handled in all states.

3.7Handling of syntax error in component handling from TCAP

IS41 did not properly handle syntax errors in component received from TCAP. If a syntax error was detected in a component received from TCAP, IS41 would attempt to send TCPPT_TC_U_REJECT even when TCAP had already sent TCPPTA_TC_RESPONSE. This has now been corrected and IS41 no longer sends TCPPT_TC_U_REJECT after receipt of TCPPTA_TC_RESPONSE.

3.8 PermissionToRelease

All supported operations now set the PermissionToRelease to TRUE, except ConnectResource and DisconnectResource operations, for which PermissionToRelease is set to FALSE in the invokes and to TRUE in the responses.

Dialogic
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Release Notes for Version 3.01

1. Overview

This release extends the IS41 module to support for multiple Network Contexts. Each Network Context allows IS41 to support a different set of options. This release must be used in conjunction with TCAP for Solaris V3.04 or later in order to support Network Context handling.

This release is fully backwards compatible with the previous release.

2. New functionality

2.1 Network Context

A new configuration message IS41_MSG_NC_CONFIG (0x77be) has been added to allow the configuration of additional Network Contexts. The IS41_MSG_CONFIG (0x77b4) message should be used to configure the default Network Context for the first network. For each subsequent Network Context the message IS41_MSG_NC_CONFIG is required. The IS41_MSG_NC_CONFIG message contains parameters to define address format and IS41 specific options and therefore allows different behaviour for the module to be selected depending on the Network Context of the dialog. Section 'Message handling' below describes how this is selected using the IS41PN_NC parameter.

The meaning of the parameters in the IS41_MSG_NC_CONFIG message is the same as the equivalent parameters in the IS41_MSG_CONFIG message. When used to support multiple local point codes within the same network the options settings should typically be the same in both messages.

New IS41 Message - IS41_MSG_NC_CONFIG

Synopsis:

Message used to configure the additional Network Context TCAP module for operation.

Message Format:

Additional of NC specific options via IS41_MSG_NC_CONFIG message.

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

Network Context id

The Network Context id will identify the Network Context being defined. The default Network Context (0) is configured using the existing IS41_MSG_CONFIG message therefore this message should only be used for Network Contexts 1 to 3. This assumes that four Network Contexts are permitted.

Note: All other Parameters have the equivalent meaning and types as those used in the IS41_MSG_CONFIG.

Message Handling

When a dialog is initiated remotely no change is required as IS41 will automatically determine which Network Context is appropriate. Where the dialog is initiated locally then the application needs to specify which Network Context the message is destined for. This effectively also indicates which point code will be used as the originating point code.

The Network Context should be indicated in the first message for the dialog being used. In the case of IS41 this will be in IS41 Open Request using the IS41PN_NC parameter.

If no Network Context is specified then the default Network Context NC0 is assumed.

Parameter name	IS41PN_ NC (98)
Parameter length	Variable, typically 1. Length of zero indicates Network Context is unknown.
Parameter data	Network Context Identifier 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.

2.2 New Software error code

A new error code has been added to the Software Event Indication IS41_MSG_ERROR_IND message (0x07b9) message as detailed in the table below:

Mnemonic	Code	Parameters	Description
IS41SWE_INVALID_NC	18	**mt**	Network Context is out of range.

mt is the message type: type field, either from received message, or from message that would have been sent if no error occurred

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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 Solaris V3.00 or later. It cannot be used with earlier development packages.

Customers who wish to make use of the Long Message support offered in V3.00 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 Solaris V3.00 or later and TCAP for Solaris V4.00 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 Solaris shared object

This release makes use of shared object version of the GCT library included in V3.00 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.

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Release Notes for Version 5.00

1. Overview

This release expands IS41 to support the MSID (Mobile Station Identity) parameter as defined in standard TIA-751. The release also adds support for MDN Message Centers and adds an option that allows Class 4 services to send and received messages to TCAP with a zero length Invoke Id field. The release fixes a fault where a parameter had not been defined as mandatory for an operation.

This release is the first release since V4.00 and also includes enhancements to the licensing mechanism to support new format tokens in license files.

This release is backwards compatible with the previous release.

2. New functionality

2.1 Support for TIA-751 MSID

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[2]	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

[2] 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[3]	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

[3] 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[4]	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[5]	C
IMSI[5]	C
MobileDirectoryNumber	O
ServiceIndicator	O
ElectronicSerialNumber	O
SMS_NotificationIndicator	O
SMS_TeleserviceIdentifier	O
qos	O
Timeout	O
Ellipsis	O

[4] One of the parameters MobileIdentificationNumber or IMSI must be present.

[5] Both MobileIdentificationNumber or IMSI are optional.

2.2 MDN Support added

The SMS Request service now supports MDN – Message Centers. This adds two opional parameters to the service.

- IS41PN_mobileDirectoryNumber (50)
- IS41PN_serviceINdicator (99)

The IS41PN_serviceIndicator parameter is new on this release and is defined as 6.5.2.wB in *3GPP2 N.S0011-0.*

Parameter name	IS41PN_serviceIndicator (99)
Parameter length	Variable, typically 1.
Parameter data	Type of Service: 1. CDMA OTASP 2. TDMA OTASP 3. CDMA OTAPA

The table for SMS Request in the section above shows the service parameters

2.3 Option on Invoke Ids for Class 4 services

A feature has been added that allows Class 4 services to send and received messages to TCAP with a zero length Invoke Id field. The feature allows the module to be compatible with other IS41 providers that do this.

The Class 4 services currently supported by the module are **OANSWER** and **TANSWER** (Class 4 services expect no result or error after the initial message).

The feature is selected using a bit in the modules configuration options. The option selection mask is defined as **IS41F_NO_INVOKE_ID_CLASS4_MSGS** (0x0002). The option is applicable to the option field of the module configuration message **IS41_MSG_CONFIG** and to options field for Network Contexts set by the **IS41_MSG_NC_CONFIG** message.

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.

3. Faults cleared

3.1 Slow license validation

Some users have experienced problems with slow license validation when using existing licenses. This can be addressed by reactivating the license and using the updated license file. Contact your support representative if you are experiencing this problem.

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

In previous releases, the parameter “MobileIdentificationNumber” in 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 above table.

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