Dialogic® DSI Protocol Stacks

Development Package for Solaris - Software Release Notes

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Contents

Release 5.7.6

1 Overview

This is a feature release which adds multiple protocol enhancements to DMR, INAP, MAP and TCAP including the ability to support an increased number of INAP dialogues.

The release includes further changes and corrections as detailed below.

This is the first Generally Available release since Release 5.6.33 and it is fully backwards compatible with that release.

1.1   Applicability

This release is suitable for all users.

The following updated user documentation is available for use in conjunction with this software release:

Dialogic® DSI - Software Environment Programmer's Manual. Issue 18

Dialogic® DSI Diameter Stack – Functional API Manual, Issue 5,

Dialogic® DSI Protocol Stack – TCAP Programmer's Manual, Issue 15,

Dialogic® DSI Protocol Stack – INAP Programmer's Manual, Issue 15,

Dialogic® DSI Protocol Stack– M3UA Programmer's Manual, Issue 11,

Dialogic® DSI Protocol Stack– MAP Programmer's Manual, Issue 25.

Dialogic® DSI – SIGTRAN Monitor Programmer's Manual, Issue 7.

1.2   Resolved Customer Issues

The following customer issues are addressed in this release: IYP00118225 & #300673.

2 New Functionality

2.1   DMR – Decoding Diameter Errors [#300673]

Diameter Answer messages reporting an Error (and which have the Error flag set) were not previously supported. An attempt to encode or decode the message would result in an EncoderException being raised.

This release adds support through the addition of DiameterError Command class in the dmtrCmds Library for both Java and C++.

Refer to the *Diameter Functional API Manual* for further details.

2.2   INAP - Extended Dialog Support

This release offers the ability to use more than 64k concurrent dialogues when using INAP. The new capability requires the use of a per-protocol (INAP and TCAP) extension licenses. In addition users will need to make changes to the API as detailed in the INAP Programmer's Manuals in order to address a wider range of dialogues. The maximum number of dialogs supported is 1,048,576.

The Extended Dialogue Id format can be used by all users but the ability to configure greater than 64K dialogs requires new licenses for INAP and MAP (in addition to the regular TCAP or MAP license).

Item Name	Product Description	Part No.
SS7SBHSTTCAP-EXT	TCAP Extension Host Protocol License	852-887
SS7SBHSTINAP-EXT	INAP Extension Host Protocol License	852-889

s7_mgt can be used to configure extended TCAP operation by appropriate configuration of the <base_ogdlg_id> <nog_dialogues> <base_icdlg_id> <nic_dialogues> parameters in the TCAP_CONFIG command.

Extended dialogue ID support is enabled by setting bit 16 in the <options> field of the TCAP_CONFIG command and bit 5 in the <options> field of the INAP_CONFIG command. See the TCAP and INAP Programmer's Manuals for further details.

When using Extended Dialogues, s7_mgt will configure the TCAP local transaction ID to use 4 bits for instance, 20 bits for dialogue reference and 8 bits for sequence number. Without Extended Dialogs, s7_mgt will use 4 bits for instance, 16 bits for dialogue reference and 12 bits for sequence number. In both cases the maximum number of TCAP hosts is 16.

2.3   MAP – Updates to TS 29.002 v14.2.0

This release updates the following MAP services to support the full parameter set as defined in MAP specification release 3GPP TS 29.002 v14.2.0:

MAP-ANYTIME-INTERROGATION
MAP-NOTE-MM-EVENT
MAP-PROVIDE-SUBSCRIBER-INFO
MAP-SEND-ROUTING-INFO
MAP-SEND-ROUTING-INFO-FOR-SM

2.4   MAP – Silent abort

This release adds the ability for a MAP user to silently abort a dialogue. This ensures that any resources allocated to the dialogue (within both MAP and TCAP) are released without sending any indication to the remote end.

A 'silent abort' is achieved by using a new single octet parameter MAPPN_dialog_abort_type, 809 (0x0329) in a MAP_MSG_DLG_REQ messages where the Primitive Type is U_ABORT_REQ. The parameter data should be set to the value 1.

The related MAPPN_user_rsn parameter is now optional for U_ABORT_REQ messages. If omitted, the 'MAPUR_user_specific' (0) reason is used.

2.5   TCAP – Silent abort

This release adds the ability for a TCAP user to silently abort a dialogue. This ensures that any resources allocated to the dialogue are released without sending any indication to the remote end.

A 'silent abort' is achieved by using a new single octet parameter TCPPN_ABORT_TYPE, 25 (0x19) in a TCP_MSG_DLG_REQ messages where the Primitive Type is U_ABORT_REQ. The parameter data should be set to the value 1.

2.6   TCAP – Preserve original Translation Type

The release adds the ability to preserve the outgoing Translation Type (as used in the outgoing BEGIN) and use it for any subsequent outgoing messages that are part of the same dialogue (rather than using values received in the first CONTINUE).

This functionality is enabled by setting bit 1 in the 'ext_flags' field of the TCAP module configuration message (TCP_MSG_CONFIG) or by setting bit 17 in the OPTIONS field of the TCAP_CONFIG command when using s7_mgt.

2.7   M3UA – Support for 8 Local Application Servers

Providing the system is not operating in dual redundant mode, this release supports the use of up to eight M3UA Network Contexts so that up to eight Local Application Servers (LAS) can be supported.

s7_mgt uses the following default module_id's for the new LAS modules: NC4 – 0xe5, NC5 – 0xe6, NC6 – 0xe7 and NC7 – 0xe8.

2.8   DMR – Routing across 8 Peers

This release adds new routing capability to DMR allowing each route to use up to eight peers. When configured in loadshare mode routes will use round robin distribution, otherwise the first configured available route list is used.

2.9   Maximum number of Messages

For use in specific special cases, this release increases the number of messages permitted within the software environment from 65,000 up to 200,000 for both NUM_MSGS and NUM_LMSGS. However, for normal operation it should not be necessary to use more than 65k messages.

If using more than 65,000 messages (not recommended) the process.max-msg-qbytes (Solaris 10/11) or msginfo_msgmnb (Solaris 9) kernel parameter must be set to a value greater than or equal to the number of NUM_MSGS + NUM_LMSGS multiplied by 16. (When using 65,000 messages or less the multiplier is 12 which is unchanged from previous releases).

If not specified, NUM_MSG defaults to 2,000 and NUM_LMSG defaults to 0.

2.10   s7_mgt – Configurable SCTPN PMTU

This release provides the ability to use a fixed, configurable, Path MTU value when using SCTPN (instead of automatically discovering what value to use). This is achieved using a new optional parameter (PMTU) for the SNSLI command in config.txt which should be set to the required PMTU value. If set to 0 then a fixed value of 1438 octets is used.

2.11   s7_mgt – Support for 256 M2PA Links

s7_mgt now supports the configuration of up to 256 M2PA links.

3 Other Changes

3.1   SCTPN – Operation on Terminate

SCTPN operation during when the process is terminated has been modified to ensure that any active associations are torn down using SCTP ABORT (rather than SCTP SHUTDOWN). Previously it was indeterminate whether ABORT or SHUTDOWN was used.

Whilst the transmission of SHUTDOWN is a valid alternative to ABORT it has been observed that certain manufacturers STPs appear to require manual intervention to recover from receipt of SHUTDOWN.

3.2   SS7MD Driver – Memory Map

The SS7MD board device driver has been updated to support operation in conjunction with recent x86 servers which have different memory allocation schemes.

3.3   TCAP – Receipt of AARQ in response to AARQ

When awaiting a response to a TCAP request containing a TCAP dialogue portion with AARQ (Request), TCAP will correctly reject a CONTINUE if it contains AARQ (Request) by aborting the dialogue.

3.4   TCAP – Releasing resource following faulty BEGIN

This release corrects an issue when TCAP fails to respond to an invalid TC-BEGIN message (due to failure to format or send an ABORT message) which previously resulted in failure to release the internal dialogue resources.

3.5   TCAP – Accept NC Fail abort code

The TCAP module now supports receipt of the TCPUABT_NC_NOT_SUP (3) abort reason for the TCPPN_ABORT_REASON parameter when received from the TCAP user (eg MAP) indicating receipt of an inappropriate Network Context.

3.6 MAP –Extended Dialog Support (IPY00118225)

This release corrects an issue with the operation of MAP Extended Dialogue operation which, when configuring more than 64K invokes, resulted in dialogue failures.

3.7 MAP – 'longForwardedToNumber'

This release includes corrections to the coding of parameters for the MAP-SEND-ROUTING-INFO and MAP-RESUME-CALL-HANDLING services. Previously the services incorrectly used the NULL parameter MAPPN_long_ftn_sup in the ForwardingData table for 'longForwardedToNumber' field instead of FTN-AddressString type number.

For this release a new parameter MAPPN_long_fwd_to_num (value 798 or 0x31e) is added and used for the 'longForwardedToNumber' field in the above services.

3.8 MAP – Receipt of MAP V1 with explicit AC

This release accepts receipt of MAP Version 1 Application Contexts (AC) where the AC is explicitly defined in the message.

3.9 MAP – Compatibility of Service Type with AC

For outgoing transactions, the MAP Service Type is validated against the Application Context (AC) and in the event of mismatch a new event indication MAPSWE_MISMATCH_USER_PRIM (30) is generated. For backwards compatibility the dialogue is allowed to continue as previously, however users observing the new event report should validate and correct the application as appropriate.

3.10 INAP – Per-dialogue GTT tables.

This release allows INAP to select a different SCCP routing plan on a per dialogue basis. Selection of the Translation Table is performed using a new integer parameter RIID (Routing Indicator Identifier) which takes a value between 1 and 65535 and acts as a token to identify the table within SCCP.

3.11 INAP – U-Abort in Established State

For previous releases, the TCAP module failed to process a U-ABORT if the INAP User sent the INAPPN_applic_context parameter with the INAP-U-ABORT-REQ message when the module was in the 'Established' state. For this release, the parameter is ignored if a U-ABORT is sent by the user in this state.

3.12 INAP – Use of Code Shift

This release corrects operation of the Code Shift parameter (INAPPN_CODE_SHIFT) which previously caused unpredictable results.

3.13   INAP – User provided QoS

To use the INAP API to set QoS for dialogues, the INAP QoS parameter (INAPPN_qos) is now permitted for INAP_MSG_DLG_REQ messages. The parameter is allowed for all primitive types for this message. After QoS has been sent in a TCAP message, the dialogue QoS reverts to the default value.

3.14   INAP – Error Reports

The INAP_MSG_ERROR_IND message has been changed to define a 4 octet parameter field when Extended Dialogues are in use.

In addition an INAPSWE_DLG_ID_ERR (13) error is added for the INAP_MSG_ERROR_IND message. This error is reported when the module cannot find a valid dialogue ID from the message received from the INAP User or from TCAP.

A new error code INAPSWE_USER_MSG_UNEXP (12) for the INAP_MSG_ERROR_IND message is generated when an unexpected message is received from the INAP user.

This release corrects reporting of and invalid Network Context using the INAPSWE_INVALID_NC error within the INAP_MSG_ERROR_IND message.

3.15   INAP API – Extended Dialogue Support

New functions have been added to the API to support extended dialogue use. The new functions use a 32 bit Dialogue ID (in contrast to the existing functions which use a 16 bit Dialogue ID. New users should all use the new functions which are prefixed IN_EXT_xxx. Refer to the header file for further information.

3.16   INAP API – Removal of 'IN_LMSGS' definition

The INAP API now only supports functions for the 'Large Message' build. These functions use a 'u16' for parameter lengths and require an 'option' parameter for the IN_init_component() function. For previous releases, a '#define IN_LMSGS' statement enabled this build, this is now assumed and need not be stated. Previously, if 'IN_LMSGS' was not defined, the 'Old API' functions were selected. These did not support long messages and used 'u8' for parameter lengths. For this release, the 'Old API' functions are no longer supported. Users that build in this way must modify the API function calls.

3.17   INAP API – Encoding Corrections

This release corrects, the ETSI CS-2 encoding of the 'GenericNumbers' and 'INServiceCompatibilityIndication' which affects the coding of the InitialDP and Connect operations.

This release corrects the encoding of the EventReportBCSM operation for CAMEL V2 and CAMEL V1. Previously if the INPN_MessageType parameter was not defined, the coding for an empty table was defined for the message.

This release corrects operation of the CAMEL V1 ActivityTest. Previously a response was not permitted.

The encoding of the ITU CS-1 (Q.1218) InitialDP operation has been changed. The 'TriggerType' parameter which was missing has been added (uses the existing INPN_TriggerType parameter). Additionally the MiscCallInfo table was not correctly implemented as it was always encoded to a null length table.

3.18 M3UA / M2PA– License Selection

This release corrects an issue when searching for M3UA or M2PA licenses whereby detection of an expired license would abort the search for other licenses and potentially prevent selection of a valid license.

3.19 M3UA – Support for 384 Remote Servers

M3UA has been corrected so that it is possible to use up to 384 Remote Servers (subject to appropriate licensing). s7_mgt now supports configuration of up to 384 M3UA Remote Servers.

3.20 M3UA – Limit Error Indications

When a TX_REQ could not be routed M3UA now restricts the number of M3U_MSG_M3U_ERROR (0x02ef) event messages sent to management to no more than one indication every 10 seconds per DPC.

3.21 M3UA – DAUD Route option

M3UA options allow DAUD generation to be disabled on a per-route and a per-server basis. This release corrects operation so that when not disabled at the server level the per-route setting is respected.

3.22 s7_mgt –TCAP Configuration

This release includes a correction to ensure that the number of TCAP incoming dialogues is correctly configured in all cases.

3.23 s7_mgt – SCTPN Timer Values

s7_mgt has been updated to correctly configure the SCTPN t1_init (3,000ms) and cookie life (30s) timer values.

3.24 gctload – Resource Validation

This release corrects an issue which prevented correct operation of the mechanism that runs on startup to ensure that there are sufficient resources to allocate and send the maximum number of messages defined for use within the system.

Dialogic
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Release 5.6.33

1 Overview

This is a maintenance release which includes updates to MTP3, TCAP, MAP and SCTPN and changes to command line parameter validation for the utilities dsistat, dsistatus, dsigtt and dsictrl.

This release is based on Release 5.6.24 and it is fully backwards compatible with that release.

1.1 Applicability

This release is suitable for all users.

2 Changes

2.1 MTP3 – Enhanced parameter checking

Operation of MTP3 has been enhanced to provide additional validation and enforcement of parameter values as follows to guard against incorrect usage:

On configuration of MTP ROUTE, a check is performed to ensure that all specified link sets have already been configured.

On activation of a signaling link or link set, a check is performed to ensure that a route has been configured to the adjacent signaling point.

On ending an MTP ROUTE, if the DPC is an adjacent signaling point a check is performed to ensure that the link set to the adjacent signaling point is not currently active.

In the event that the validation fails the message is rejected with status MTP_BAD_PRIM (0x51).

2.2 MTP3 – Japan – Increasing Link Set NUM_LINKS

This release corrects an issue that previously resulted in a failure to route traffic to new links when the number of Links in a Link Set was increased dynamically and the MTP3 is configured for Japan operation. Previously the Links would go In Service but traffic was only transmitted across the original links.

2.3 TCAP – Component Resource Management

This release corrects a fault that could cause TCAP module component resources not to be freed when the dialogue was closed. The fault occurred in certain states when receipt of an SCCP message caused at least 3 Rejects to be sent to the TCAP User and the dialogue remained open.

2.4   TCAP – Multiple Network Contexts

This release changes the TCPF_SEND_TCAP_VER option to be valid on a per-Network context basis. It also includes corrections to ensure consistent usage of Network context (NC) in situations where multiple NCs are in use.

2.5   TCAP – APDU Protocol Version data length

This release explicitly checks the length of the TCAP Protocol Version as contained in the APDU part of the message received from SCCP and if invalid considers it as a syntax error. The length should be 2 octets for ITU-T operation and 1 octet for ANSI operation.

2.6   MAP – TCAP Reject Problem Code (IPY00117769)

This release corrects the coding of a Reject Problem Code sent to TCAP in the event that an invalid response is received (ie. a badly formatted Result). The Reject Problem Code is now set to 'Response Problem, Mistyped Parameter', previous releases incorrectly used the value 'Error Problem, Mistyped Parameter'.

2.7   MAP – MAP-UPDATE-LOCATION V3

This release adds additionl parameters to the MAP-UPDATE-LOCATION V3 service to achieve compliance with the MAP Release 5 specification, 3GPP TS 29.002 v5.13.0. This requires the addition of a new parameter definition MAPPN_cs_lcs_notsup_by_ue (757).

2.8   SCTPN – Association Establishment

This release corrects an issue whereby a failing activation request could lead to a user of SCTP (e.g. M2PA) not being informed of the failure.

2.9   dsigtt, dsictrl, dsistat & dsistatus

Operation of the utilities dsigtt, dsictrl, dsistat and dsistatus has been enhanced by additional parameter validation and error reporting.

The timeout mechanism within the utilities dsigtt, dsictrl, dsistatus and dsistat has been enhanced so that it is no longer dependent on the receipt of a message to generate the timeout condition.

dsistat and dsistatus are now separate binaries and they no longer behave differently depending on the name under which that are invoked. This allows each binary to be renamed if required without changing operation.

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Release 5.6.24

1 Overview

This is a feature release which introduces support for Solaris 11 (SPARC), includes SCCP and IS41 enhancements and introduces two new command line utilities (dsistatus and dsigtt) to support status monitoring and Global Title management.

The release also includes several changes and corrections to a number of protocol modules and management utilities as detailed below.

This is the first full release since Release 5.5.14 and it is fully backwards compatible with that release.

1.1   Applicability

This release is applicable for all users.

This release adds support for Solaris 11 (SPARC). The following table shows the operating systems supported by the different software components.

Component	Solaris 10 / Solaris 11 SPARC	Solaris 10 x86	Solaris 11 x86
Development Package Management Utilities and Protocol Extensions (gctload, s7_mgt, s7_log, s7_play, dsistat, dsicrtl, dsitrace, RSI, RMM, DTC, etc)	Yes	Yes	Yes
SS7 Host Protocol Software (MTP3, ISUP, SCCP, TCAP, MAP, IS41, INAP)	Yes	Yes	Yes
SIGTRAN Host Protocol Software (SCTPN, M2PA, M3UA)	Yes	Yes	Yes
Diameter Host Protocol Software	No	Yes	Yes
Drivers for SS7MD / SS7LD	Yes	Yes	Yes
Drivers for SPCI / SS7HD	Yes	Yes	No

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI – Software Environment Programmer's Manual, Issue 17,
Dialogic® DSI Protocol Stack – IS41 Programmer's Manual, Issue 9,
Dialogic® DSI Protocol Stack – DSISTATUS User Manual, Issue 1,
Dialogic® DSI Protocol Stack – DSIGTT User Manual, Issue 3.

2 New Functionality

2.1   SCCP – Support for up to 2048 Global Titles

This release increases the capacity for Global Title Translation (GTT) entries to a maximum of 2048 providing that not more than 512 entries exist in a single translation table.

In the event that an attempt is made to configure more than 2048 GTTs or more than 512 GTTs in a single table, SCCP will respond to the SCP_MSG_GTT_ADD message with status=7 (SCPE_NO_RESOURCES).

The configuration utilities s7_mgt and dsigtt both support configuration of up to 2048 GTTs.

2.2   SCCP – SSR Availability Events

This release adds to SCCP generation of an event to the maintenance module each time the status of a sub-system resource (eg LSS, RSP, RSS) changes to 'allowed' or 'prohibited'.

The event is conveyed in a new SSR Maintenance Indication message SCP_MSG_SSR_MAINT_IND (0x0764). The message is decoded by s7_log and optionally also logged to syslog.

Generation of SSR Maintenance Indications is active by default but can optionally be disabled by setting bit 9 of the <options2> parameter in the SCP_CONFIG command (or setting bit 9 of the 'ext2_options' field in the SCP_MSG_CONFIG message if using message-based configuration).

When an SCCP Sub-System resource is configured, the previously unused id field in the message header is now used to identify the SSR. It is stored within SCCP and used as the 'id' field within any SSR Maintenance Indications.

2.3   SCCP – SSN based Routing

This release allows the Sub-System Number in the received SCCP Called Address to be used as a key into Global Title Translation so that it is possible to route messages based on the received SSN to different destinations (even in situations where the received Global Titles are identical).

To activate this feature the user should set bit 6 in the <options2> field of the SCCP_CONFIG command. When activated, the SSN configured in the GTT Target Address will be used as part of the GTT process.

When using this option it is recommended to always specify a SSN in the Target Address.

2.4   IS41 – LocationRequest service support

This release adds support for the IS41 service 'LocationRequest'. The module supports the service as defined by the 3GPP2 specification X.S0004-540-E v2.0. This is a super-set of the service originally defined by TIA/EIA-41-D 1997.

The following Service Primitive types are defined for the new service:

IS41ST_LOCATIONREQ_REQ (21)
IS41ST_LOCATIONREQ_IND (21)
IS41ST_LOCATIONREQ_CNF (149)
IS41ST_LOCATIONREQ_RSP (149)

In addition the following two parameters are added: Digits(Carrier) and Digits(Destination). For full details refer to *IS41 Programmer's Manual Issue 9*.

2.5   s7_mgt support for multiple Network Contexts

This release allows s7_mgt to configure significantly more complex systems through the use of the config.txt file. In particular the following capabilities are added:

Ability to configure up to four separate Network Contexts at the MTP3 level where each MTP3 runs as a separate process and uses its own module_id.

Ability to configure up to four Network Contexts for TCAP and TCAP User modules (MAP, IS41 and INAP) each running within a single per-protocol module.

Ability for SCCP to route messages to multiple Network Contexts at the SCCP User Layer.

Ability to configure SCCP with per-RSP (Remote Signaling Point) parameters (mtp_module_id, label_fmt, address_format and local point code) so that a single SCCP instance can appear as multiple local point codes to the external network.

2.6   dsistatus – Enhanced Status Utility

This release includes a new command line utility (dsistatus) which allows status to be read back from the protocol stack layers without requiring prior knowledge of the configuration of the system. The utility should be used in conjunction with the *DSISTATUS User Manual* which fully defines the command syntax and output format.

2.7   dsigtt – GTT Management Utility

This release includes a new command line utility (dsigtt) intended for management of the SCCP Global Title translation database. The utility allows GTTs to be configured, modified and displayed. It also allows GT entries to be dumped to file and reloaded from file. The utility should be used in conjunction with the *DSIGTT User Manual* which fully defines the command syntax and output format.

3 Other Changes

3.1   Japan Enhancements

This release includes a number of enhancements to operation for use in Japan deployments. These include correct coding of the Message Priority field when using the SS7MD board or the M3UA protocol and correct formatting of the SCCP routing label when using M3UA. It is important that M3UA from this release is not used with SCCP from previous releases and vice versa.

3.2   ssdm – Board Failure

In the event that ssdm detects a board failure it will issue Out of Service indications to MTP3 for any links that were not already out of service.

3.3   SS7MD - Japan MTP2 operation

This release includes a modification to MTP2 for use in Japan which ensures the FIB and FSN are reset prior to attempting a new link alignment cycle.

3.4   MTP3 – TFC message priority

This release includes a correction to MTP3 operation in dual mode with multiple message priorities to ensure that received Transfer Controlled Messages are processed correctly irrespective of the message priority.

3.5   MTP3 – Reading Link Status and Route Status

This release adds the ability to read back status for links and routes without needing to know what links and routes have been configured. By setting status=0xd0 when sending MTP_MSG_R_LK_STATUS or MTP_MSG_R_RT_STATUS messages to MTP3, the id field is used to determine the link or route and if that id is not configured then data for the next configured link or route will be returned.

3.6   MTP3 – Japan – Changeback Operation

This release includes two corrections to the operation of the Changeback procedure when configured for operation in Japan. For non-DoCoMo operation the coding of the CBD/CBA messages has been corrected. In addition on receipt of a CBD message MTP3 now correctly provides A/B plane distinction.

3.7   MTP3 – SLTM failures

This release corrects an issue that in exceptional circumstances could result in a link activation cycle failing due to "SLT failure" prior to sending the SLTM message.

3.8   SCCP – GTT towards Local Sub-System

SCCP now allows messages to be routed to a Local Sub-System without modifying the Point Code in the SCCP Called Party Address. This functionality is invoked by setting bit 8 in the <options2> parameter of the SCCP_CONFIG command in config.txt.

This release allows SCCP to indicate a Network Context (NC) value in messages sent towards TCAP. The NC value can be assigned as a result of Global Title Translation (GTT).

To configure a Network Context value for a GTT, users should set the <dpc> field in the SCCP_GTT_ADDRESS command to "LPC-n" where n is the numeric value of the Network Context.

3.9   SCCP – GLST Congestion

This release includes enhancements to operation of Global Title Load Share Table routing to respect the congestion status of remote signaling points and avoid sending traffic towards more heavily congested destinations.

3.10   SCCP – Unique GTT Identifiers

SCCP supports a configuration option to only permit unique values for the GTT identifier. This is activated by setting bit 7 of the <options2> parameter in the SCCP_CONFIG command

3.11   SCCP – XUDTS Hop Counter return cause

In the event that SCCP detects a hop count violation it generates a UDTS message containing a Return Cause. This release corrects the value supplied in the Return Cause so it is now set to value 12.

3.12   SCCP – SCP_MSG_R_GTT_MASK Deprecated

The use of the SCP_MSG_R_GTT_MASK message is no longer supported. Users should use the SCCP_MSG_R_GTT message instead.

3.13   TCAP – Operation Timer Expiry

TCAP now optionally generates a maintenance event on unexpected expiry of an operation timer. This feature is enabled by setting bit 28 in the <options> field of the TCAP_CONFIG command in config.txt. s7_log will report TCPEV_INV_TIMEOUT.

3.14   TCAP – Reject format when NC != 0 (IPY00117714)

This release corrects a problem that, when operating with multiple Network Contexts at the TCAP level, potentially caused incorrect formatting of a reject component sent to the network. The issue occurred when the PDU format (bit 1 of the 'flags' field) in the per-NC configuration) was different to the value configured for NC=0.

3.15   MAP – Receipt of empty CONTINUE (IPY00117734)

When the first backwards message received is an empty CONTINUE there are no service components to send to the application. To allow the application to determine that there are no service indication messages (and consequently no DELIMIT to follow), in this situation MAP will now include a new parameter in the MAP-OPEN-CNF message to indicate that there are no service indication parameters to follow.

The new parameter is designated MAPPN_cpt_indicator (756), it has a single octet data field and the data octet is set to value zero to indicate that there is no service indication messages (and no DELIMIT) to follow.

3.16   MAP – Generation of TC-U-ABORT

This release corrects an issue with generation of TC-U-ABORT within the MAP module which could result in incorrect parameters being including in the TC-U-ABORT which in turn could result in incorrect routing of the message within SCCP.

3.17   MAP – Support for extended MAP QOS

This release allows the full TCPPN_QOS parameter value to be specified at the MAP level using the MAPPN_QOS parameter which can now include a priority indication. This allows MAP users to select the message priority on a per message basis. The format of the MAPPN_QOS parameter is identical to the coding of the TCAP TCPPN_QOS parameter as defined in the *TCAP Programmer's Manual*.

3.18   IS41 – Support for extended IS41 QOS

This release allows the full TCPPN_QOS parameter value to be specified at the IS41 level using the IS41PN_QOS parameter which can now include sequence control and message priority information. This allows IS41 users to override the internal message priority generation and select the message priority on a per message basis. The format of the IS41PN_QOS parameter is identical to the coding of the TCAP TCPPN_QOS parameter as defined in the *TCAP Programmer's Manual*.

The IS41PN_qos parameter can be used in the first Service Requests message (IS41_MSG_SRV_REQ) and for service response messages.

3.19   IS41 – TCAP Idle Abort reason

Add new Provider Reason code is added to IS41 to indicate when TCAP aborts a dialogue due to an Idle Timeout. When this occurs, the IS41PR_idle_timeout (7) reason is reported in an IS41PN_prov_rsn parameter sent in an IS41_MSG_DLG_IND message with IS41DT_P_ABORT_IND primitive type.

3.20   IS41 – Support for TC-NOTICE-IND

IS41 now supports receipt of the TC_NOTICE_IND message and conveys it to the user as follows:

a) If IS41 has just send a request to TCAP, initiated by the user and is in the 'INIT' state, the Notice message causes IS41 to attempt to close the dialog. It sends a U-ABORT to TCAP with Abort Reason=User Defined and it sends OPEN_CNF to the IS41 user, with Result=Refused, Provider Reason=Node Not Reachable and a new Report Cause parameter.

b) If IS41 is in any state other than 'INIT', it sends a NOTICE_IND message to the IS41 user and the dialog remains open (the user may then choose to abort the dialog). The NOTICE_IND to the user is sent a Problem Diagnostic parameter=IS41PD_message_not_delivered and a new Return Cause parameter.

A new parameter IS41PN_report_cause (value 0x70) is added to the IS41 module. Report Cause may be returned in NOTICE_IND or OPEN_CNF messages sent to the IS41 User. The parameter has length one octet and defined the 'Return Cause' value defined by SCCP T1.112.3. Return cause is only defined when a UDTS is received or generated by SCCP. The cause is then return via TCAP in a NOTICE_IND message to the IS41 module.

A new value (3) for the Problem Diagnostic parameter (IS41PN_prob_diag) is added for this release IS41PD_message_not_delivered

This value is returned via the parameter when a NOTICE_IND is sent to the IS41 User due to a TC_NOTICE_IND being received from TCAP.

A new value (8) for the Provider Reason parameter (IS41PN_prov_rsn) is added for this release to indicate Node not Reachable. This value is returned via the parameter when a OPEN_CNF is sent to the IS41 User due to a TC_NOTICE_IND being received from TCAP.

3.21   SCPTN – Association Failure

This release contains an SCTPN correction to ensure that an internal recovery timer is correctly cancelled. Previously under certain circumstances the timer (which is started when attempt to write data to a socket is blocked) was not cancelled and expired 50 seconds after the event that started it running. This could result in apparent spontaneous failure of an association.

3.22   SCPTN – Association Options

This release ensures that user-specified configuration values for Heartbeat Interval and Max Path Retransmissions are correctly applied. In previous releases this was not always operating correctly when configured as Server end or in the case of Solaris 11 also when operating as Client end.

*Note: It is important when setting user supplied values to ensure that max_rtx_data does not exceed the value given by the calculation (max_retx_heartbeat * number of paths), otherwise system wide operating system default values will be used.*

When using s7_mgt, by default max_retx_data and max_retx_heartbeat are both set to 3.

3.23   SCTPN – Recovery from Congestion

This release includes changes to ensure correct recovery from the congested condition and, in the event of message discard due to congestion, to ensure that once discard commences all messages for transmission will be discarded until the congestion has abated.

3.24   M2PA –Link Deactivation takes Association Down

Operation of M2PA has been enhanced so that if the link is deactivated at the MTP3 level then M2PA will proactively take down the underlying SCTP association. It does this by detecting when a link has been left in the Out Of Service state for a period of 10 seconds.

3.25   M2PA – Support for SS7_MSG_R_STATE

M2PA now supports and responds to the SS7_MSG_R_STATE message allowing applications to use the same message to read status information from both MTP2 and M2PA.

3.26   M3UA – Association Load sharing

M3UA is now capable of load sharing across up to 16 separate associations when connected to a Remote Application Server (RAS) or Signaling Gateway (SGW).

3.27   M3UA – Congestion Handling

M3UA includes some minor enhancements relating to congestion handling. Receipt of a SCON message with no congestion level parameter is now treated as congestion rather than no congestion. In addition the congestion level reported by the M3U_MSG_R_ROUTE_STATUS (0x62ea) message has been corrected.

3.28   M3UA – Routing Context for LAS selection

M3UA no longer requires received messages to contain a Routing Context (RC) when there is only a single Local Application Server using an association. The Routing Context is however always required when multiple Local Application Servers are in use over the same association.

3.29   s7_mgt – Configuration enhancements

When configuring M2PA, s7_mgt sets the number of links based on the highest number of configured M2PA link (rather than the number of links configured).

s7_mgt now supports values for the SCCP GTT id up to 65534.

When configuring M3UA, s7_mgt now includes the OPC that was configured in the SNAPI command to M3UA.

3.30   s7_mgt – TCAP_USER Command

s7_mgt supports a new config.txt command TCAP_USER which allows the user to configure the module_id of the TCAP user module on a per SSN and per Network Context basis. The syntax is as follows:

TCAP_USER [NC] <ssn> <tcap_user_module_id>

3.31 s7_mgt – Type 2 Global Titles (IPY00117592)

This release corrects configuration and display of Type 2 Global Titles to ensure that irrespective of containing an even or odd number of digits the configuration remains consistent.

3.32 s7_log –Display of congestion and status

The s7_log utility has been modified to display separate status and congestion levels for M3UA route status.

3.33 dsictrl – Signaling Route Test (Japan)

The dsictrl command line utility has been enhanced so that it can now trigger MTP3 to run the Japan-specific Signaling Route Test (SRT) and display the result to the screen. The syntax to invoke the command is as follows:

dsictrl MTPL SRT <dpc> <linkset-link>

3.34 dsistat – Parameter Validation

The dsistat utility has been enhanced to provide more robust validation of command line parameters and improved error reporting.

Dialogic
26-Nov-15
Revised 30-Sep-16

Release 5.5.14

1 Overview

This release is a maintenance release which resolves issues as detailed below.

This is the first full release since Release 5.5.4 and it is fully backwards compatible with that release.

1.1   Applicability

This release is applicable for all users.

1.2   Resolved Customer Issues

The following customer issues are resolved in this release: IPY00117247, IPY00117351 and IPY00117479.

2 Other Changes

2.1   SS7MD on HP Proliant Gen9 Servers (IPY00117479)

This release provides a correction to the SS7MD card driver to prevent a timeout during download on certain HP Proliant Gen9 servers.

2.2   SCTPN – Incomplete INIT (IPY00117247)

This release corrects an issue introduced in Release 5.5.3 which resulted in multi-homed SCTP associations failing to include all the configured IP addresses in the INIT / INIT_ACK exchange.

2.3   M2PA –Congestion Recovery (IPY00117351)

This release provides a correction to the operation of M2PA to ensure that it correctly recovers from the congested state. Previously, when operating with multiple congestion levels selected, it was possible for a link to get stuck in the congested condition with congestion level 2 or 3. This happened on receipt of an acknowledgement that acknowledged multiple messages.

Dialogic
12-Aug-15

Release 5.5.4

1 Overview

This is a feature release which introduces support for Solaris 11 on x86 architecture and includes feature updates to INAP, SCCP, MAP, INAP, M3UA, MST and DMR protocol modules as detailed below.

This release also includes a number of other changes and corrections as detailed below.

This is the first full release since Release 5.4.4 and it is fully backwards compatible with that release.

1.1   Applicability

This release is applicable for all users.

This release adds support for Solaris 11 (x86). The following table shows the operating systems supported by the different software components. All Solaris 11 deployments must use this release or later.

Component	Solaris 10 SPARC	Solaris 10 x86	Solaris 11 x86
Development Package Management Utilities and Protocol Extensions (gctload, s7_mgt, s7_log, s7_play, dsistat, dsicrtl, dsitrace, RSI, RMM, DTC, etc)	Yes	Yes	Yes
SS7 Host Protocol Software (MTP3, ISUP, SCCP, TCAP, MAP, IS41, INAP)	Yes	Yes	Yes
SIGTRAN Host Protocol Software (SCTPN, M2PA, M3UA)	Yes	Yes	Yes
Diameter Host Protocol Software	No	Yes	Yes
Drivers for SS7MD / SS7LD	Yes	Yes	Yes
Drivers for SPCI / SS7HD	Yes	Yes	No

This release is validated in conjunction with Solaris 10 Update 10 (SPARC), Solaris 10 Update 10 (x86) and Solaris 11.2 (x86).

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI – Software Environment Programmer's Manual, Issue 15,
Dialogic® DSI Protocol Stack – SCCP Programmer's Manual, Issue 11,
Dialogic® DSI Protocol Stack – TCAP Programmer's Manual, Issue 13,
Dialogic® DSI Protocol Stack – MAP Programmer's Manual, Issue 21,
Dialogic® DSI Protocol Stack – IS41 Programmer's Manual, Issue 8,
Dialogic® DSI SIGTRAN Stack – SCTP Programmer's Manual, Issue 6,
Dialogic® DSI SIGTRAN Stack – M3UA Programmer's Manual, Issue 10.

1.2   Resolved Customer Issues

The following customer issues are resolved in this release: IPY00116444, IPY00116450, IPY00116461, IPY00116792, IPY00116902, IPY00117101, IPY00117102 and IPY00117117.

2 New Functionality

2.1   Support for Solaris 11

This release adds support for Solaris 11 on x86 architecture. In some cases the binary files for Solaris 11 are different to those required for Solaris 10. At software installation time the appropriate files will be installed based on the version of the operating detected by the install utilities. The files for which different versions are supplied are device drivers and the SCTPN binary.

2.2   Support for Diameter over TCP/IP

This release adds the ability to optionally use TCP/IP as the transport protocol for Diameter instead of SCTP (which was already supported). The use of TCP/IP is achieved by using DMR in conjunction with SCTPN and when configuring the SNLINK setting SNTYPE=DMRTCP. For example:

```
SNSLI:SNLINK=1,IPADDR=127.0.0.1,SNEND=C,SNTYPE=DMRTCP,PPORT=3868,
HPORT=3868;
```

2.3   SCCP – Multiple Global Title Translation Tables

This release introduces the concept of multiple Global Title Translation Tables which allows the SCCP user to select a different SCCP routing plan on a per dialogue basis.

Selection of the Translation Table is performed using a new integer parameter RIID (Routing Indicator Identifier) which takes a value between 1 and 65535 and acts as a token to identify the table. The RIID parameter is optional and can be used when configuring GT Translation, and when configuring a Remote Signaling Point. Refer to the SCCP Programmer's Manual for further details.

This release allows the TCAP user to select on a per-dialogue basis which SCCP Global Title Translation Table will be used. Further information is available on request.

2.4   MAP – Provide Subscriber Information

This release enhances support for the Provide Subscriber Information service in line with MAP specification 3GPP TS 29.002 V8.12.0. The release adds support for the following new parameters:

- E-UTRAN Cell Global Identity
- Tracking Area Identity
- Ellipsis data for LocationInformationEPS table
- Call Priority

The new parameters are also used in the following services:

- Any Time Interrogation Response
- Send Routing Information (V3) Response
- Note MM Event Request

The coding and usage of these parameters is documented in *MAP Programmer's Manual Issue 21*.

2.5   MAP –Support Update Device Configuration Service

The release adds support for the proprietary MAP V3 service Update Device Configuration (UDC). The UDC service uses Op Code = 242 (0xf2) and uses Application Context Object ID: 1.2.826.0.1249.58.1.1.3.3

2.6   INAP – User control of TCAP Idle Timeout

This release allows the INAP user to optionally control the TCAP Idle Timeout on a per dialogue basis.

A new parameter (INAPPN_dlg_idle_timeout 0x20) is defined for use in the INAP_MSG_DLG_REQ message when the primitive type is INAP-OPEN-REQ (1), INAP-OPEN-RSP (0x81) or INAP-DELIMIT-REQ (3).

The parameter is a 1 or 2 octet value which contains the timeout value in seconds. When the two octet version of the parameter is used the first octet is the most significant value.

When using the INAP API library, the dialogue Idle Timeout parameter can be set using the IN_set_dialogue_param() call for OPEN, DELIMIT or OPEN RESPONSE dialog primitives together with the new parameter INDP_dlg_idle_timeout.

2.7   M3UA – Additional Traffic Measurements

This release adds four new messages for gathering measurements from the M3UA module. These include per association traffic measurements and per module traffic measurements and peak utilization measurements (both per-association and per module) which capture the peak transmit and receive traffic rates and link utilization of the previous 5 minute, one hour and one day intervals.

The Read Global Traffic Statistics message - M3U_MSG_R_GL_STATS (0x62b2) provides module-wide counts of MSUs and payload octets sent and received.

The Read Association Traffic Statistics message - M3U_MSG_R_LK_STATS (0x62b3) provides per-association counts of MSUs and payload octets sent and received and includes a count of out of service transitions and duration.

The Read Global Traffic Peak Usage Statistics message - M3U_MSG_R_GL_PEAK_USAGE (0x62b4) provides module-wide peak transmit and receive traffic rates and load for the previous 5 minute, one hour and one day intervals.

The Read Association Traffic Peak Usage Statistics message – M3U_MSG_R_LK_PEAK_USAGE (0x62b5) provides per-association peak transmit and receive traffic rates and load for the previous 5 minute, one hour and one day intervals.

2.8   MST – Discard messages for unknown associations

This release adds a new option to control reporting of messages for which no explicit association configuration has been provided. Previously such messages were all passed to the application but they can now optionally be discarded.

To discard messages for associations that have not been explicitly configured, the user should set bit 1 in the 'options' field of the MST configuration message (MST_MSG_CONFIG).

3 Other Changes

3.1   SS7LD Board – MTP2 T6 Timer Operation

MTP2 on the SS7LD Signaling Board has been corrected such that it no longer starts the T6 timer upon reception of SIB when the link is in service and the retransmission buffer is empty.

3.2   SS7HD Board - Congestion Recovery (IPY00116461)

This release corrects an issue in SSDH where following system congestion the interface to the SS7HD board did not always recover correctly resulting in outgoing messages getting 'stuck' within SSDH.

3.3   gctload – t1 Option

This release corrects an issue which could potentially cause 'gctload –t1' to crash if executed immediately after gctload had been started up.

3.4   SCCP - Dynamic Global Title Configuration

This release allows dynamic Global Title Configuration to preserve the sequence in which entries in the table are used irrespective of the sequence in which they are added. The 'id' field in the SCP_MSG_GTT_ADD is used to order the entries with the lowest value always used first. Duplicate 'id's are still permitted but these will be stored in the table in the order they are received.

3.5   SCCP – Rebalance of Class 0 Traffic

This release introduces the ability for Connectionless Class 0 SCCP traffic to be evenly balanced towards a Remote Signaling Point through regeneration of the SLS in a cyclic manner. The option can be selected on a per-RSP basis by setting bit 6 in the <flags> parameter of the SCCP_SSR command when configuring the RSP.

3.6   SCCP – Passing MTP label to SCCP LSS

The release adds the ability for Connectionless Messages to optionally pass the received MTP3 label to the Local Sub-System in the existing SCPPN_MTP_SIO_LABEL parameter. The feature is enabled by setting bit 5 in the <flags> parameter of the SCCP_SSR command when configuring the LSS.

3.7   TCAP – Primitive type validation

TCAP now validates the primitive type octet against the component parameter in messages received from the user and discards invalid combinations reporting the error to management.

3.8   TCAP – Selective Tracing

The TCAP module now generates selective trace messages when certain software or maintenance events are reported.

3.9   MAP – Update Location Ellipsis (IPY00116450)

For previous releases the Update Location service did not always capture unexpected / unsupported parameter data from a received message and pass it in the MAPPN_ellipsis parameter to the MAP User. This has been corrected for and the MAPPN_ellipsis parameter now returns all unexpected / unsupported parameter data received for the top level (UpdateLocationArg) table of the operation. As a consequence of this correction, when using the MAPPN_ellipsis parameter to insert formatted ASN.1 data into the Update Location Invoke message, the data will be inserted at the end of the message that is sent to TCAP.

3.10   MAP –User Error codes (IPY00116444)

For previous releases when TCAP Reject components were received with Invoke problem codes of 'Initiating Release' or 'Resource Limitation', incorrect DSI MAP User Error codes where reported to the MAP User via the MAPPN_user_err parameter. This has been corrected so the correct errors are now reported – MAPUE_initiating_release (38) and MAPUE_resource_limitation (37).

3.11   IS41 – Receipt of Originating Request with IMSI

This release corrects the handling of received Origination Request messages to ensure that if the MSID contains IMSI but not MID then the message is still accepted.

3.12   IS41 - OPEN_RSP from user supports addresses

IS41 now allows the user to optionally specify destination address (IS41PN_dest_address) and/or origination address (IS41PN_orig_address) in the IS41DT_OPEN_RSP primitive using the IS41_MSG_DLG_REQ message.

3.13   IS41 – Selective Tracing enabled by default

IS41 selective tracing is now enabled by default. For further detail refer to the IS41 Programmer's Manual.

3.14   IS41 – Prevent orphan Aborts to TCAP

On receipt of OPEN_REQ directly followed by U_ABORT_REQ, both from the user, IS41 will now simply close the dialogue (rather than sending an orphan UABORT to TCAP).

3.15 SCTP/SCTPD – Protocol Changes

SCTP now includes the error cause supplied by the SCTP_MSG_ABORT (0x728c) message in the 'Abort Association' (ABORT) chunk.

On failure of an association's active transport address, SCTP will check the remaining transport addresses and mark the association as closed if none are active.

On receipt of unexpected TSNs, SCTP will generate an event report to management (SCTP_EVT_HIGH_TSN (0x02) or SCP_EVT_LOW_TSN (0x03).

3.16 SCTPN – Status Reporting

This release corrects some SCTPN status reporting as follows:

Occasional incorrect "peer address inactive" status indications when no state change had occurred are no longer reported.

Peer address status reports now include peer addresses which were configured but are not in use by the association and addresses which are in use by the association but are currently unconfirmed.

3.17 SCTPN – Protocol Changes

This release corrects the generation of time intervals in SCTP statistics messages to ensure they are not corrupted by changes of system time.

This release allows the client port to be configured as zero on a server end configuration allowing the client end to use any port number.

This release corrects an issue that prevented SCTPN server associations being established when multiple associations shared the same local port but different local IP addresses.

3.18 M2PA – Minor Protocol Corrections

This release corrects an issue where, on link failure, M2PA could incorrectly generate multiple error events indicating reception of data packets with invalid sequence numbers.

This release prevents M2PA incorrectly sending a SS7MSG_OUT_SVC (0x8304) indication to the upper layer if a SS7_MSG_START (0xc204) request was received during association initialization.

This release corrects an issue where, in certain circumstances, M2PA timers T3 and T4 were started simultaneously which could result in links prematurely exiting the proving state.

This release ensures that LINK Status – Busy indications are not generated on associations that are currently inactive.

This release corrects an issue where M2PA would incorrectly generate an error event if a link was configured and then ended without an intervening start.

This release corrects an issue which, in some cases, resulted in failure to start M2PA timer T2. This ensures that if the peer is not responding the link will periodically drop back to Out of Service and then reattempt alignment.

3.19   M2PA – Management Indications

This release corrects an issue which prevented M2PA trace mask configuration working correctly and no longer generates event indications on receipt of Emergency Onset/Clear events from MTP3.

M2PA now generates event indications to management to notify the reason for an in service link failing, and to notify of abnormal protocol timer expiry events. The message type is 0x0229 (MGT_MSG_M2P_EVENT).

3.20   M3UA - Status Indications on Reactivation

This release adds the ability to regenerate status indications in the event that an activate request M3U_MSG_ACTIVATE (0x72f5) is received for an association that has already been activated. When enabled, Association Status Indications, AS State Indications and Route Status Indications will be regenerated at the point the activate request is received.

This feature is enabled by setting bit 5 in the 'options' field of the M3U_MSG_CONFIG message which when using s7_mgt is achieved by setting bit 5 in the OPTIONS field of the CNOPS command as follows:

CNOPS:MODULE=M3UA,OPTIONS=0x0020;

3.21   M3UA – Licensed Throughput Calculation

This release includes minor corrections to the calculation of the number of octets transmitted for the purpose of throughput based licensing. In addition the payload octets are no longer counted in the case that it is not possible to send the message to the network.

3.22   MST – Error Reporting

This release corrects reporting of MST management event indications and measurements to ensure that the correct events are generated and measurements incremented in response to error conditions.

3.23   DMR – Client Connection Failure (IPY00117102)

This release corrects a problem which would result in a DMR client failing to reestablish a connection to its server peer if a connection attempt fails.

3.24   DMR - Capability Exchange (IPY00117101, IPY00117117)

This release includes corrections within the DMR module to ensure that the Supported-Vendor-ID AVP is correctly populated in the Capability Exchange (rather than being set to the value zero). It also prevents generation of multiple Supported-Vendor-ID AVPs with identical values in the Capability Exchange request.

3.25   RMM – Synchronization

This release corrects issues within RMM to prevent RMM partners failing to synchronize and ensures that the correct point code status is reported to the user.

3.26   DSA – SNMP Support

Internally DSA has been updated to use a later release of the netSNMP library (netSNMP 5.7.2.1).

3.27   s7_mgt – Diameter Session Configuration

This release allows the user to specify the number of incoming and outgoing Diameter sessions using the DMSYI command in config.txt as follows:

```
DMSYI:NUM_IC_SESS=0x7fff,NUM_OG_SESS=0x7fff;
```

3.28   s7_mgt - ISUP Circuit Group Management Id

This release allows the user to select the global maintenance and management module for ISUP circuit groups rather than using the per circuit group configuration values.

This feature is activated by using the config.txt command Configuration Module Options Set command (CNOPS), and setting MODULE=S7_MGT and setting bits 16 and 17 in the OPTIONS parameter. For example:

```
CNOPS:MODULE=S7_MGT,OPTIONS=0x00030000;
```

Bit 16: When set to one 'maint_id' is set to the global maintenance module and 'maint_inst' is set to zero. The global maintenance module is 0xef by default or the value specified in the MAINT_MOD_ID command.

Bit 17: When set to one 'mngt_id' is set to the global management module and 'mngt_inst' is set to zero. The global management module is 0xef by default or the value specified in the MGMT_MOD_ID command.

3.29   s7_mgt – Global Title Load Share Tables

This release allows the configuration of SCCP Global Title Load Share Tables (GLSTs) using config.txt. Further detail is available on request.

3.30   s7_mgt –LAS/SG Configuration (IPY00116792)

This release corrects an issue encountered when attempting to configure both Local Application Servers and Signaling Gateways within the same config.txt file.

3.31   s7_mgt –Multiple Associations to same SG (IPY00116902)

This release corrects an issue encountered when attempting to configure multiple Local Application Servers with more than one association to the same Signaling Gateway.

3.32   DTU/DTR – HSS Emulation Use Case

This release adds new capabilities to the example DTU/DTR utilities. A new run-time option for DTR (-hss) causes DTU to monitor incoming IMSI numbers from Update-Location-Requests (ULR) and sends a Cancel-Location-Request (CLR) to the previous MME if the MME (Origin Host) changes. DTU has been enhanced to automatically respond to a Cancel Location request if received.

Dialogic
06-Mar-15
Revised 07-Aug-15

Release 5.4.4

1 Overview

This is a feature release which adds support for the Diameter Gx and Rx interfaces and enhances the status reporting for SCTPN.

The release also includes additional diagnostics for SS7HD boards and RSI, and provides changes and corrections as detailed below.

This release is the first generally available release since Release 5.3.2 and it is fully backwards compatible with that release.

1.1   Applicability

This release is applicable to all users.

This release is validated for use in conjunction with Solaris 10 Update 10 for both SPARC and x86 architectures.

This release includes an updated ss7.dc4 code file (V5.13) for use with the Dialogic® SS7HD Network Interface Board.

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI Diameter Stack – DMR Programmer's Manual, Issue 4,
Dialogic® DSI Diameter Stack – Diameter Functional API Manual, Issue 4,
Dialogic® DSI SIGTRAN Stack - SCTP Programmer's Manual Issue 6.

1.2   Resolved Customer Issues

The following customer issues are resolved in this release: IPY00102722, IPY00102727, IPY00102728, IPY00115211, IPY00115281, IPY00115684 and IPY00115751, IPY00115782 and IPY00115877.

2 New Functionality

2.1   Diameter – Support for Gx and Rx Interfaces

The DMR module, DMRAPI libraries and Java examples have been updated to support the Gx and Rx interfaces.

2.2   SCTPN – Enhanced Status Reporting

This release adds a new message SCTP_MSG_R_STATUS (0x629f) to read the current status for an Association and enhances the existing SCTP_MSG_R_PEER_ADDR_STATS (0x6293) to provide additional per-path status and ensure deterministic reporting of per-path status throughout the lifetime of the Association. Full details of the enhanced message format are contained within *SCTP Programmer's Manual Issue 6*. The dsistat utility has been updated to use the enhanced SCTP association and peer address status.

3 Changes

3.1 SS7HD Board – Enhanced Diagnostics

The ss7.dc4 V5.13 code file included within this release captures additional diagnostic information if a signaling processor on the board fails. In the event of a failure, this information is read by SSDH and reported using the existing MGT_MSG_DIAG_IND (0x0f1f) message to management (module_id=0xef) allowing it to be captured by s7_log in the maintenance log.

3.2 SS7MD Board – Receiver Lock-up (IPY00115751)

The SSDM binary in this release corrects an obscure issue with the SS7MD board observed when used in monitoring mode where occasionally (eg. after months or years of operation) the receive channel locks up and stops receiving further data.

3.3 SS7MD Board – MTP2 Link Status

SSDM in this release corrects the reporting of MTP2 link status following link deactivation to ensure that 'Out of Service' is reported. Previously 'Initial Alignment' was reported even though there had been no attempt to reactivate the link.

3.4 SS7MD Board – 'src' in monitored RX_IND

This release corrects an inconsistency between the SS7MD board and other DSI boards in the coding of the 'src' module_id in a monitored RX_IND message. Previously the src was set to 0x71 but it is now set to 0x61. RX_IND messages from 0x71 do not include the MTP2 header whilst those from 0x61 do include the MTP2 header.

3.5 SS7MD Board – Process Failure

This release corrects operation of SSDM when reading measurements from the board. Previously an internal race condition could occasionally result in a process failure when reading measurements when operating under extreme overload conditions.

3.6 SS7MD Board- IN_SYNC Indication (IPY00115877)

This release corrects the reporting of LIU status IN_SYNC when operating the SS7MD card in certain T1 frame formats in monitoring mode.

3.7 SS7LD Board – Memory Leak (IPY00115782)

This release corrects a progressive memory leak within SSDL which would consume additional memory and eventually cause the SSDL process to fail.

3.8 ISUP – Reset Circuits (IPY00102727)

This release modifies ISUP behavior so that on reception of a circuit reset or group circuit reset from the network ISUP will now send a release with clearing cause value 41 (temporary failure) rather than the previous of 31 (normal unspecified).

3.9   BICC – Auto-Blocking (IPY00102728)

This release corrects operation of the BICC protocol so that ISUP correctly re-asserts blocking following receipt of a single circuit reset from the network on a locally blocked circuit by issuing a CGB message. Previously blocking was not re-asserted in this case.

3.10   TCAP/MAP – Sending NC to TCAP (IPY00102722)

This release corrects a fault where Network Context (NC) is not sent to TCAP after the user sends a MAP_MSG_DLG_REQ, MAP-OPEN-REQ message with a NC parameter (MAPPN_NC). This only happened when the user doesn't send any Service Requests (MAP_MSG_SRV_REQ), but follows the MAP-OPEN-REQ with a MAP-DELIMITER-REQ message. This release corrects the fault and will include a TCAP NC parameter in the TCAP BEGIN message if no TCAP Invokes were sent (the TCAP Invoke message is normally used to pass NC). The NC parameter is only passed to TCAP if its value is non-zero (the default NC).

TCAP now correctly processes NC if received in a Dialog request.

3.11   MAP –User parameters > 255 octets (IPY00115211)

This release supports larger parameter lengths for two parameters (MAPPN_siginfo 2560 octets and MAPPN_ellipsis 500 octets) which exceed the previous 255 octet limit. In order to use parameters over 255 octets in length the MAP User must use the MAP Code Shift mechanism. Further information is available on request.

3.12   MAP – Merged Components

When Not Last (NL) components are received by the MAP module, the parameters are decoded and saved until the final Last component (L) is received. Then the saved parameters are combined with the latest parameters. For this release a maximum parameter length test is performed after merging. If the resultant parameter length exceeds the maximum allowed for the parameter, a service provider error is reported to the MAP-User and, if Not Last, a reject sent to the network.

3.13   SCTPN – Failure to Establish Associations

This release corrects an issue that prevented SCTPN server associations being established when multiple associations shared the same local port but different local IP addresses.

3.14   SCTPN - Potential Failure

This release corrects operation within SCTP which could occasionally result in a process failure following receipt of an INIT on an unconfigured port.

3.15   SCTPN – IPv4 Address Format (IPY00115684)

This release corrects an issue introduced in Release 5.4.0 which resulted in IPv4 addresses being incorrectly coded as IPv6 mapped IPv4 addresses within the SCTP_MSG_NETWORK_STATUS message.

3.16   RSI – Enhanced Diagnostics

This release includes updates within RSI to proactively detect a failure of communications between RSI and RSI_LNK and generate an event MGT_MSG_EVENT_ID (0x008) to the management module (0xef) for logging in the maintenance log. RSI also reports lost heartbeat responses using the same mechanism. The status value in the event report is set to 0xe1 .. 0xe4 for 1 .. 4 consecutive missed heartbeats respectively and 0xe5 in the event of failure to communicate with RSI_LNK.

3.17   DMR - P_ABORT on timer expiry (IPY00115281)

When using the Authentication Server State Machine (typical of LTE Servers) and the User guard timer expires then a P_ABORT indication is generated by DMR for the User Application. This indication was erroneously being sent to module id 0x00. This is now resolved and the indication is sent to the User Module Id

3.18   DMRAPI – Support 64 bit AVP types

This release adds support for unsigned and signed 64 bit AVP types to the Diameter API library. Classes diameter::Unsigned64Avp and diameter::Integer64Avp types have been added to DmrApi.jar library.

3.19   DMRAPI – Result Codes

A new enumeration containing result codes defined in RFC3588 has been added with ResultCodeAVP.

3.20   DSA –SNMP Lock-up

This release corrects a potential lock-up issue within the DSA binary whereby on receipt of a large number of messages in quick succession the binary could lock up and stop servicing its message queue.

Dialogic
04-Apr-14
Revised 30-Apr-14

Release 5.4.0

1 Overview

This is feature release of the DSI Development Package for Solaris which adds support for IPv6 addresses to the Dialogic® DSI SIGTRAN Stack allowing it to be used in IPv4, IPv6 and mixed networks.

This release also adds support for DoCoMo protocol variants as an extension to the existing Japan capabilities. It also increases the maximum number of M3UA associations supported from 256 to 384.

Further changes and corrections as detailed below are also included.

This is the first full release since 5.3.3 and it is fully backwards compatible with that release.

1.1   Applicability

This release is applicable to all users.

This release is validated for use in conjunction with Solaris 10 Update 10 for both SPARC and x86 architectures.

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI – Software Environment Programmer's Manual, Issue 15,
Dialogic® DSI Protocol Stacks – SCCP Programmer's Manual, Issue 10,
Dialogic® DSI Protocol Stacks – TCAP Programmer's Manual, Issue 13,
Dialogic® DSI SIGTRAN Stack – SCTP Programmer's Manual, Issue 5,

1.2   Resolved Customer Issues

The following customer issue is resolved in this release: IPY00102645.

2 New Functionality

2.1   SIGTRAN IPv6 Support

This release adds support for IPv6 when using SIGTRAN protocols. Specifically the SCTPN and s7_mgt modules have been enhanced to support IPv6 addresses. Full details on the use of IPv6 addresses are provided in the *Software Environment Programmer's Manual* and the *SCTP Programmer's Manual*.

2.2   MTP3 – DoCoMo operation for Japan

This release adds support for MTP3 Japanese DoCoMo operation and adds a new configuration option (Bit 25 of the <options> field of the MTP_CONFIG command) specifically for DoCoMo operation.

To select DoCoMo operation users should ensure that bits 10, 11, 20, 21 and 25 are all set in the <options> field of the MTP_CONFIG command. For example, (assuming no other options are required):
MTP_CONFIG 0 0 0x02300c00.

When configured for DoCoMo operation, MTP3 now initializes all timer settings to the appropriate DoCoMo default values. Timer values can still be adjusted using the MTP3 timer configuration message. Note that Timer T16 is used to implement DoCoMo timer Tc.

2.3   SCCP – DoCoMo operation for Japan

This release adds support for SCCP Japanese DoCoMo operation and adds a new configuration option specifically for DoCoMo operation.

The new option is bit 4 in the <options2> parameter in the SCCP_CONFIG command when using config.txt or bit 4 in the 'ext2_options' field of the SCP_MSG_CONFIG message.

For correct DoCoMo operation, config.txt users should set bits 7 and 31 in the <options> parameter and bits 3 and 4 in the <options2> parameter of the SCCP_CONFIG command. When using message based configuration, users should set bit 7 (SCPF_PRI_BA) in the 'options' field, set bit 15 (SCPXF_16PC) in the 'ext_options' field and set bits 3 and 4 (SCPX2F_5BIT_SLS and SCPX2F_DOCOMO respectively) in the 'ext2_options' field of the SCP_MSG_CONFIG message.

2.4   SCCP – GTT Separator Character configuration

This release allows the user to choose which character is used as a GTT separator character. Previously the fixed value 0x0e was used which prevented the use of character 0x0e in the Global Title itself. This release allows any value in the range 0x0a .. 0x0f to be used as the separator character for GTT configuration purposes.

Configuration of the separator character is achieved when using config.txt by setting the GTTSEP option using the CNOPS command as follows:
CNOPS:MODULE=SCCP,GTTSEP=0x0a; The CNOPS command must appear prior to any SCCP_GTT_PATTERN, SCCP_GTT_ADDRESS or SCCP_GTT commands in the configuration file.

When message-based configuration is used the separator character is configured using offset 59, size 1 in the SCP_MSG_CONFIG message. When set to zero the default (0x0e) is used.

2.5   SCCP – Global Title Load Share Table Statistics

The message SCP_MSG_R_GLST_STATS (0x6756) has been added to allow user to obtain usage statistics for configured Global Title Load Share tables.

2.6   SCCP – Event Report Limiting

To avoid excessive reporting of identical Maintenance Events (SCP_MSG_MAINT_IND) and Software Events (SCP_MSG_ERROR_IND) that can reduce system throughput, SCCP now issues a maximum of 10 event indications for an event type over any one minute interval. Further events during the interval are suppressed.

2.7   M3UA – Support for 384 Associations

When used in conjunction with SCTPN, this release increases the maximum number of SCTP Associations from 256 to 384. Users with licenses that support 384 or more link equivalents can now use up to a maximum of 384 associations.

2.8   MST – Monitoring Diameter Messages

The capability of the SIGTRAN monitoring tool (MST) has been enhanced to support monitoring of SCTP based Diameter traffic. To invoke this capability the user should set bit 8 in the 'stn_mask' when configuring the MST Tap.

3 Other Changes

3.1   SCCP – Additional Diagnostics

SCCP now generates Selective Trace messages when certain Software Events or Maintenance Events occur. This contains the message that caused the software or maintenance event to occur.

SCCP tracing has been enhanced to support tracing of messages broadcast to the partner instance and error messages.

SCCP will now generate a Maintenance Event with event_code=18 (SCPEV_CO_NOT_CONFIGURED) if a Connection Request message (SCPPT_N_CONNECT_REQ) is received from the SCCP User but Connection Oriented operation has not been configured.

When configuration or management messages are rejected due to having insufficient length of data in the parameter area the status value is now set to value 11 (SCPE_BAD_MSG_LEN).

3.2   SCCP – SCCP Module ID configuration

SCCP now ignores the 'module_id' field in the module configuration message (SCP_MSG_CONFIG). To run with a different module_id use the command line option –m.

3.3   SCCP – Confirmation Messages

When confirming messages, SCCP will now issue the confirmation message after processing the original message (previously some confirmation messages were issued prior to processing).

3.4   SCTPN – INIT operation

This release corrects the number of INIT retransmissions to agree with the user configured RTXI parameter in the SNSLI command and corrects the value of the SCTP T1i timer as configured using the CNTOS command.

The ability to optionally user-configure the maximum number of consecutive INIT retransmissions on a single path has been added using the new RTXP parameter in the SNSLI command. The valid range is 1 to 20.

3.5   SCTP/SCTPD – Path Selection (IPY00102645)

This release corrects an issue handling the situation where a lack of heartbeat on the active path is detected. The previous release would send a message on the failed path before resending on the correct alternative path. This release uses the alternative path as soon as the heartbeat failure is detected.

3.6   M2PA – Link Recovery

This release makes small changes to M2PA to ensure consistent operation on link restoration.

M2PA now does not attempt to establish the SCTP association until the first Start request is received from MTP3. On receipt of Start request from MTP3, M2PA will not return Out of Service until the current attempt at establishing an association fails (previously this was incorrectly returned immediately). Following a failed attempt to establish an association, M2PA delays for 1 second prior to attempting to re-establish the association.

M2PA no longer generates SIB on Out of Service links.

3.7   M2PA – Japan Priority Support

This release adds support for the PRI field in the M2PA header field for use in Japanese networks. To invoke this feature, bit 4 should be set in the M2PA per-link options. When using s7_mgt this is achieved using a new M2PA_OPTIONS parameter for the SNLSI command as follows:

SNSLI:SNLINK=n, … M2PA_OPTIONS=0x0010;

3.8   M2PA – Timer Value Ranges

The range of timer values supported by M2PA has been increased to allow operation in networks such as DoCoMo in Japan. The following table shows the permitted range and default values:

M2PA Timer	Maximum	Minimum	Default	Units/Granularity
T1	50s	10s	40s	Seconds
T2	50	5	10	Seconds
T3	15	1	2	Seconds
T4N	10	2	7	Seconds
T4E	1000ms	400ms	500ms	100ms
T6	6	1	3	Seconds
T7	3000ms	500ms	1000ms	100ms

3.9   dsistat –IPv6 Support

The dsistat utility has been enhanced to support display of IPv6 addresses.

Dialogic
11-Oct-13

Release 5.3.3

1 Overview

This is a maintenance release which adds new capabilities for MAP and M3UA protocols and extends SS7LD to support up to 16 SS7 links.

The release also includes corrections and changes as detailed below and is fully backwards compatible with the previous release.

1.1 Applicability

This release is applicable for all users.

This release is validated for use in conjunction with Solaris 10 Update 10 for both SPARC and x86 architectures.

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI Components - Software Environment Programmer's Manual, Issue 14
Dialogic® DSI Protocol Stacks – MAP Programmer's Manual, Issue 19
Dialogic® DSI Protocol Stacks – M3UA Programmer's Manual, Issue 9
Dialogic® DSI Protocol Stacks – DTS User Guide, Issue 10

1.2 Resolved Customer Issues

Updates to resolve the following customer issues are included in this release: IPY00102308, IPY00102115, IPY00102297, IPY00102391 and IPY00102746.

2 New Functionality

2.1 SS7LD – 16 link support

The SS7LD board, when used with the appropriate software license now supports up to 16 SS7 links on a single board or up to a maximum of 16 SS7 links per system when SS7 links are distributed across multiple boards.

2.2 MAP - EPS-AuthenticationSetList data

Support for EPS-AuthenticationSetList data as used by the SendAuthenticationInfo service has been added to the response in accordance with the MAP specification 3GPP TS 29 002 version 9.4.0 (Release 9). Two additional parameters have been added to the request for the same service: numberOfRequestedAdditional-Vectors and additionalVectorsAreForEPS. The parameters for both changes are only required for MAP-V3 Application Contexts as defined in the specification.

2.3   MAP - UpdateGPRSLocation, CancelLocation and PurgeMS to MAP Release 8

The implementation of the following MAP services has been extended to support all the parameters detailed in MAP Release 8 as detailed in 3GPP TS 29.002 v8.18.0:

MAP-UPDATE-GPRS-LOCATION
MAP-CANCEL-LOCATION
MAP-PURGE-MS

2.4   MAP - CurrentSecurityContext data added to SendIdentification service

The MAP-SEND-IDENTIFICATION service has been updated and is now compliant with MAP specification 3GPP TS 29.002 v9.4.0. The request parameters are unchanged but the following optional parameters have been added to the response:

KC for GSM
CKSN for GSM
GSM Security Context Ellipsis
CK for UMTS
IK for UMTS
KSI for UMTS
UMTS Security Context Ellipsis

For full details refer to the MAP Programmer's Manual.

The MAP-SEND-IDENTIFICATION service will correctly process received response data if the AuthenticationSetList data is received in one TCAP message and the CurrentSecurityContext data is received in another.

2.5   M3UA – New 8 link License

This release adds support for a new 8 link equivalent license.

2.6   M3UA - Audit of congested destinations

This release allows the user to disable M3UA auditing of congested destinations. Typically the auditing should be disabled for ITU-T type operation.

The option is controlled by bit 4 of the M3UA options, either in the 'options' field of the M3U_MSG_CONFIG message or by setting the M3UA options using the CNOPS command in config.txt. The bit should be set to 1 to disable auditing – for example:

```
CNOPS:MODULE=M3UA,OPTIONS=0x0010;
```

2.7   s7_mgt – LAS-Server configuration

This release corrects an issue relating to configuration of multiple Local Application Servers (LAS) connecting to multiple Signaling Gateways. Previously when each SG was bound to a different LAS the relationship was not correctly configured for LAS=2 and above.

2.8   s7_mgt – Multiple RAS with same DPC

This release allows M3UA to be configured with multiple associations connecting to the same remote Destination Point Code (DPC). This is achieved by adding a Local Application Server (LAS) parameter to the SNRAI command to ensure that each Remote Application server (RAS) has a unique combination of DPC and LAS. The full syntax of the SNRAI command is as follows:

```
SNRAI:RAS=,[DPC=,][RC=,][NASP=,][TRMD=,][SNMP=,][LAS=];
```

3 Other Changes

3.1   SS7LD Driver (IPY00102746)

This release corrects an issue that previously could cause an issue on startup, if an SS7LD board was configured by gctload early in the operating system startup cycle (for example when gctload was started from one of the system startup scripts).

3.2   SCCP – Connection Oriented Tint timer expiry (IPY00102308)

For previous releases when the Connection Oriented end connection Tint timer expired, the connection was placed in a Maintenance Blocking state. This incorrect according to Q.714, the connection resources should be released and connection returned to the idle state. This has been corrected.

3.3   MAP - Formatting of Abort sent to TCAP

This release correctly formats the U-ABORT send from MAP to TCAP upon receipt of an invalid or unknown DialogID in a message from TCAP.

3.4   MAP - Discarded 'NotLast' Components (IPY00102115)

This release corrects an issue that previously could cause parameters received in a 'NotLast' Result response message from TCAP to be discarded. This fault only occurred when the response was received in two or more parts and parameter data was decoded for a 'NotLast' component and no parameter data was decoded for the 'Last' component.

3.5   MAP - MWD-Set parameter (IPY00102297)

This release allows the MWD-Set parameter to be defined for an Absent Subscriber error response for the MAP V1 SendRoutingInfoForSM service.

3.6   MAP - Decoding of SendRoutingInfo response

For previous releases the processing of received MAP V3 SendRoutingInfo response data would discard valid data if no data was received for any of the parameters defined under the 'ExtendedRoutingInfo' table. In this case the next valid data field in the response message was incorrectly discarded. This has been corrected in this release.

3.7   SCTPN - Management Event Indications

In the event of kernel calls failing, SCTPN now generates diagnostic Management Event Indications.

3.8   SCTPN – Correctly closes socket

In the event of failing to create an SCTP socket as a result of an incorrect host address, SCTPN now correctly closes the socket to prevent resource leakage.

3.9   DTC/DTS Operation

Operation of DTC/DTS (for use with the Dialogic® DSI SS7G41 Signaling Server in SIU mode) has been enhanced to reduce the need for application intervention to recover from transient failures of the IP network. Operation of s7_mgt has been enhanced to support additions to the DTC_CONFIG command and a new DTS_SERVER command. The functionality is detailed in DTS User Guide, Issue 10.

3.10   s7_log – Daily rolling logs (IPY00102391)

This release corrects an issue with s7_log when using the –r option (to create a new log file each day) which prevented new daily log files being created after the end of a month until the log file size limit was reached. After a new file was created based on the size limit the daily rolling log would again be created.

Dialogic
28-Jun-13

Release 5.3.2

1 Overview

This release is a feature release which introduces the Dialogic® DSI Diameter Stack providing support for the IETF Diameter Base Protocol and the ability to develop applications using Java.

The Dialogic® DSI Diameter Stack is a software implementation of the IETF Diameter Base Protocol which is intended to facilitate development of user applications that interface to LTE and IMS networks for the implementation of services in the areas of: Mobility, Location, Online Charging and Offline Charging.

This release also adds a Java class library (gctApi.jar) which allows applications developed in Java to access the native 'C' message passing library (gctlib) for allocating, releasing, sending and receiving messages for communicating between modules in a Dialogic® DSI Software Environment.

This release also contains a critical software update for any users of very new SS7LD boards. Boards with serial numbers RC920000 and greater number will not operate correctly with earlier software releases and must use this release.

The release includes further changes and corrections as detailed below.

This is the first full release of the Dialogic® DSI Development Package for Solaris since 5.2.9 and it is fully backwards compatible with that release.

1.1   Applicability

This release is applicable for all users. It is critical for users of SS7LD boards **with serial numbers RC920000 and greater** as previous software releases will not function on this version of the board.

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI – Software Environment Programmer's Manual, Issue 13
Dialogic® DSI Diameter Stack – DMR Programmer's Manual, Issue 3,
Dialogic® DSI Diameter Stack – Diameter Functional API Manual, Issue 3,
Dialogic® DSI Network Interface Boards– SS7LD Programmer's Manual, Iss 3.

2 New Functionality

2.1   Support for latest SS7LD Boards

New revisions of the SS7LD board with serial numbers RC920000 and greater use an on-board FPGA version that is incompatible with previous software releases.

This release includes updated ssdl binary, SS7LD device driver and ss7.dc7 code file (V1.11) for use with all revisions of the board.

2.2   Dialogic® DSI Diameter Stack

The Dialogic® DSI Diameter Stack is a software implementation of the IETF Diameter Base Protocol which is intended to facilitate development of user applications that interface to LTE and IMS networks for the implementation of services in the areas of: Mobility, Location, Online Charging and Offline Charging. This release supports the S6a, S6d, S13, S13', SLh, SLg, Ro and Rf interfaces.

The Dialogic® DSI Diameter Stack includes a message based binary module (DMR), a Functional API Library and utility components and header files for use when developing a User Application.

Dialogic's Diameter Module (DMR) implements the Diameter Base Protocol offering a message based API to the User Application to control Diameter sessions. DMR is a member of the family of Dialogic® DSI Components and offers similar message-based interfaces and management capabilities to those offered for other SS7 and SIGTRAN protocol layers. DMR uses the services provided by the SCTP layer of the Dialogic® DSI SIGTRAN Stack for the transfer of messages between Diameter Peers. Use of DMR is documented in the *DMR Programmer's Manual*.

Dialogic's Diameter Functional API is an API layer for use by the User Application allowing easy development of Diameter applications without being encumbered with complex encoding and decoding rules. This release introduces a Functional API for Java users.

This contains a set of Java classes to support development of applications interfacing with the DMR module. It provides a Java-based API, designed to work in conjunction with the Dialogic® DSI Software Environment message-based interface. Full details of the API are contained in the *Diameter Functional API Manual*.

The DSI Diameter Stack can be configured using the s7_mgt configuration utility which reads text based configuration commands from the config.txt file. The syntax of these commands is documented in the *Software Environment Programmer's Manual*.

2.3   Diameter License Server Operation

Operation of licensing for the Dialogic® DSI Diameter Stack is slightly different from other Dialogic® DSI Protocols in that is uses a License Server which must be running prior to starting the Diameter Stack. This section details operation of the license server:

First ensure that a valid run-time license is placed in a well know location (outside the Development Package tree so that it is not overwritten when the Development Package is updated). For example use /opt/DSI-LICENSES.

Before running gctload, startup the license server using the following command:

```
/opt/DSI/LIC/lmgrd –local –c /opt/DSI-LICENSES
```

Now startup gctload in the normal way.

In order to add or change license files, after stopping gctload, it is necessary to shutdown the license server. This is achieved using the following command:

```
/opt/DSI/LIC/lmutil lmdown -c /opt/DSI-LICENSES
```

The user will be presented with a list of running license servers on the local machine. The license server serving the "dialogic" vendor should be selected.

When starting the DMR binary it is necessary to specify the path to the run time license on the command line using the –Lp option. The following is an example of the appropriate system.txt syntax:

```
FORK_PROCESS  dmr -Lp/opt/DSI-LICENSES
```

Note: Whilst the Dialogic® DSI Diameter Stack is the only licensed procotol that requires a License Server, in the event that other Dialogic® DSI Protocol Stacks are running (and using the 'dialogic' vendor key), these protocols will also be licensed using the License Server whenever the license files are located in the folder managed by the License Server.

2.4   DTU/DTR Java Example Diameter Applications

The DSI Diameter Stack is supported by two new example applications written in Java which support both stateful and stateless session handling:

DTU – Example Application for sending Diameter Update Location Requests.

DTR – Example Application for responding to Diameter Update Location Requests using Update Location Answers.

Example configuration files are contained in the UPD/RUN directory.

The Java source code for the examples is contained in the UPD/SRC directory.

The existing makeall.sh shell script has been updated to build the applications and the resultant Java jar files will be placed in the UPD/BIN directory.

Pre-built versions of the jar files are located in the JAVA directory.

2.5   GCTLIB – Support for Java Class access

This release add a Java class library (gctApi.jar) which supports access by Java applications into the native 'C' message passing library gctlib. Further details on the Classes and methods supported are included in the *Software Environment Programmer's Manual.*

These class files are required for use of the DSI Diameter Functional API but are also suitable for other Java applications which require access into the message-passing environment.

2.6   dsistat / dsictrl / dsitrace – Support for Diameter

The dsistat, dsictrl & dsitrace utilities now support operation for the Diameter stack. Use –h on the command line for further details.

3 Other Changes

3.1   SS7LD – Operation in Oracle X4270 servers

This release provides a change to operation of the SS7LD Device Driver to prevent an issue that has been observed on Oracle SunFire X4270 servers.

3.2   SSDL – Operation of MTP3 within SSDL

This release corrects a problem within s7_mgt which prevented which prevented correct operation of MTP3 within the SSDL binary.

3.3   SSDM – Increased buffer allocation in driver

This release further increases buffer resource for the SS7MD board to prevent failure of SS7 links when operating with high throughput applications with high numbers of SS7 links

3.4   ISUP – Call Answered Measurements

This release allows the point at which a call is considered 'answered' for measurements purposes to optionally be set to be the point at which generation or reception of the Address Complete message takes place (rather than the Answer or Connect message). This is applicable in situations where the period between ACM and Answer is considered significant for measurements purposes. This option is activated by setting bit 15 in the <options> field in the ISUP_CONFIG command in config.txt.

3.5   ISUP – Local reset followed by IAM

This release corrects ISUP operation in the case where an outgoing circuit group reset is immediately followed by an outgoing IAM message before a response is received from the network. Previously ISUP correctly released the call to the application but failed to follow up with a 'Circuit Idle' indication when the response to the GRS was eventually received from the network.

3.6   ISUP –Circuit Status Reporting

This release corrects the reporting of ISUP circuit status when a call is in the incoming or outgoing 'Wait for RLC' states or the outgoing 'Wait for ACM' state. Previously this state was incorrectly reported as a maintenance state - 'transient'.

3.7   TCAP – Dialog Idle Timer

This release corrects a fault with the TCAP Dialogue Idle Timeout which previously resulted in timeouts greater than 6,553 seconds expiring early.

3.8   M3UA – Route availability

This release corrects a problem introduced in Release 5.2.8 that results in M3UA sometimes failing to notify the user part and layer management when the route becomes available. The fault occurs when a DAVA from the network is preceded by a SCON message indicating a congestion status of zero. Internally the route is marked available but no indications are generated.

3.9   M3UA – REG_REQ Parameter Ordering

This release changes the order of parameters in the Routing Key Registration (REG_REQ) message so that the Network Appearance is always the first parameter. This ensures compatibility with older RFC 3332 implementations.

3.10   s7_mgt – Route Status Indications

On completion of the configuration sequence, s7_mgt now requests MTP3 and M3UA to indicate route status to all user parts. This ensures that SCCP (which assumes that RSPs are active unless told otherwise) is proactively informed of any destinations that are not accessible and avoids possible mismatch in route status between the user part and the transport layer.

3.11   s7_mgt – RC Parameter

This release corrects a problem introduced in Release 5.2.8 within s7_mgt that prevented the RC parameter (Routing Context) from exceeding the value 255.

3.12   s7_mgt – Connection-Oriented SCCP

This release corrects the handling of SCCP-CO configuration so that the correct bit in the <options2> parameter of the SCCP_CONFIG is used to request Connection Oriented operation. Bit 31 should be set for CO operation (where previously s7_mgt looked for bit 15 to be set).

3.13   s7_log – Rolling Daily Log Files

This release corrects an issue in s7_log that could result in unintentional rolling of a log file at midnight. This error would only occur if dynamic control of the log file was being used.

Dialogic
21-Mar-13
Updated 04-Sep-13

Release 5.2.9

1 Overview

This release provides an essential correction to an issue introduced in the 5.2.8 release which prevented SIGTRAN throughput licensing operating correctly.

It also allows the user to use a larger number of SCCP Global Title Translation tables.

The release is fully backwards compatible with the previous release.

1.1 Applicability

This release is applicable to all users. In particular it is essential that any SIGTRAN users currently using release 5.2.8 take steps to immediately upgrade to this release as throughput license enforcement takes place at lower throughput than it should.

2 Changes

2.1 SIGTRAN Throughput Licensing

Release 5.2.8 introduced an issue with SIGTRAN Throughput Licensing resulting in throughput enforcement taking place at lower traffic levels than it should. This release corrects the issue.

2.2 SCCP – Increased number of GTT Tables

The maximum number of Global Title Translation (GTT) tables that can be allocated has been increased from 9 to 50. Each GTT table supports a single unique combination of Translation Type, Numbering Plan, GT Indicator and Nature of Address Indicator. The new release supports up to 50 such unique combinations.

Dialogic
14-Jan-13

Release 5.2.8

1 Overview

This is a full release of the Dialogic® DSI Development Package for Solaris which includes new features within ssdm, gctload, M3UA and RSI in addition to minor changes and corrections to other components as detailed below.

The release adds support for four new SS7MD licenses and three new higher capacity M3UA licenses. It increases M3UA capability to support 4096 routes and adds the ability to use multiple M3UA Local Application Servers. It also introduces IPv6 support within RSI.

This is the first full release of the Dialogic® DSI Development Package for Solaris since 5.2.6. It is fully backwards compatible with that release.

NOTE: Dialogic recommends that the complete Development Package is used when upgrading from a previous release. If this is not possible users should note that licensed protocol binaries from the 5.2.8 (and later) releases will not work with versions of the gctlib shared object library prior to the 5.2.8 release. If a user needs to use a 5.2.8 (or later) licensed binary in conjunction with an earlier release of the Development Package then it is essential to also install and use the gctlib shared library from the 5.2.8 (or later) Development Package.

1.1   Applicability

This release is applicable to all users.

If for any reason a user needs to use a 5.2.8 (or later) licensed binary in conjunction with an earlier release of the Development Package then it is essential to also install and use the gctlib shared library from Development Package Release 5.2.8 release.

This release is validated for use in conjunction with Solaris 10 Update 10 for both SPARC and x86 architectures.

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI Protocol Stacks - M3UA Programmer's Manual, Issue 8.

1.2   Resolved Customer Issues

Updates to resolve the following customer issues are included in this release: IPY00101131.

2 New Functionality

2.1   ssdm – Additional SS7MD licenses

This release adds support to ssdm for additional licenses for the Dialogic® DSI SS7MD Network Interface Board. The new licenses offer 96, 192, 384 and 512 LSL link equivalents providing more granularity and higher capacity. The largest license supports termination of up to 16 or monitoring of up to 32 High Speed Links.

Note: When using Low Speed Links (LSL) a single instance of the Dialogic® DSI MTP3 layer supports a maximum of 256 links.

2.2   GCTLOAD – Enhanced Status reports

A new gctload –t4 option has been added to list all host software licenses current in use and in the event that the license is time limited it shows the expiry date for the license.

2.3   M3UA – Additional Licenses

This release adds support for new higher capacity licenses of 384, 512 and 768 equivalent links. The full range of supported M3UA licenses and the capacity of each is detailed in the M3UA Programmer's Manual.

2.4   M3UA – Support for 4096 Routes

This release increases the number of M3UA routes supported to 4096.

2.5   M3UA – Multiple Local AS support

This release supports the configuration and operation of multiple Local Application Servers (LAS). Changes to the configuration model now enable up to 4 LASs to be defined. Each LAS can be active across one or more shared associations with traffic distinguished by Routing Context (RC).

A peer IPSP or SGP would typically have an entry in its routing table for each LAS with a 1:1 mapping of routing key to LAS. For each routing key a RC is defined which accompanies the traffic on the association, to identify the LAS-server relationship to which it belongs. Previously all traffic was received by the single LAS and then distributed based on SI to the user parts. With Multiple LAS, traffic for a particular routing key from the peer SG or RAS is treated separately and when it arrives at the ASP it is distributed to the correct LAS, based on the RC. Each LAS-server relationship may be activated or deactivated independently of any other.

This new functionality can be configured using s7_mgt using the "LAS" parameter in place of the "AS" parameter in the SNAPI and SNLBI commands. The RC value should now be specified on the SNLBI command.

When used with configurations that include MTP User protocols such as ISUP or MAP, LAS1 will be configured with the appropriate Service Indicator and Module ID automatically. For all other LAS values the MTP_USER_PART command should be used. s7_mgt does not configure protocols which run above LAS2, LAS3 and LAS4.

To define the service indicator and the module ID of the application or module to process messages for a specific LAS, the MTP_USER_PART command should be used.

LAS ID value	Network Context Value	Default M3UA Module ID
1	NC0	0xd2
2	NC1	0xd6
3	NC2	0xd7
4	NC3	0xd8

For example:

```
MTP_USER_PART NC0 05 0x2d
MTP_USER_PART NC1 05 0x3d
MTP_USER_PART NC2 05 0x6d
MTP_USER_PART NC3 05 0x5d
```

To send traffic for additional LAS' the following lines need to be present in the system.txt file, to send messages to the correct module ID.

```
LOCAL          0xd2                  * M3UA module
REDIRECT       0xc2      0xd2        * Management task
REDIRECT       0xd6      0xd2        * M3UA LAS2/NC1
REDIRECT       0xd7      0xd2        * M3UA LAS3/NC2
REDIRECT       0xd8      0xd2        * M3UA LAS4/NC3
```

The CNOPS and CNNCI commands now support multiple network contexts. The optional "NC" parameter can be used to identify the M3UA network context for which the remaining parameters apply. The M3UA network context is linked to the LAS as described in the table above. If the "NC" parameter is omitted the configuration applies to NC 0/LAS 1.

```
CNOPS:MODULE=M3UA,MOD_ID=0x6d;
CNOPS:MODULE=M3UA,MOD_ID=0xfd,NC=1;
```

2.6   RSI - IPv6 Support

This release adds support for connections between RSI clients and servers over IPv6 networks and for the destination address to be specified as a hostname.

Configuration of an IPv6 link is achieved via the updated rsicmd utility which now accepts an IPv6 address (or hostname) on the command line.

For a server connection, the IP address parameter is currently ignored and a socket is opened to allow a connection on the specified port via the hosts IPv4 or IPv6 address.

For a client connection, the IP address parameter should either be an IPv4 address (in a.b.c.d format), an IPv6 address (in abcd:1234::5678 format as per RFC5952) or a hostname (eg rsihost.example).

In the case of a hostname which resolves to multiple IP addresses (both IPv4 and IPv6), RSI will resolve the name once and will then attempt to connect to the server (over an IPv4 or IPv6 connection as appropriate) to each resolved address in turn until a connection is made.

3 Other Changes

3.1 SCCP – Round-robin routing using Load Share tables

This release adds an SCCP global title load share table option to provide round robin selection of point codes. This option is bit 1 of the 'options' field of the SCP_MSG_GLST_ADD message. When set to 1, successive messages are sent to the next available destination point code in a round-robin manner (irrespective of the SLS value in the message). When set to zero the SLS value is used to determine route selection.

3.2 SCCP – Generating UDTS or SST response using RSP pc_mask

This release corrects operation when generating UDTS or an SST response towards a point code where the configured RSP (Remote Signaling Point) is identified by a pc_mask (rather than an explicit match of the point code. This ensures that the National Indicator is appropriately set from the configured RSP data.

3.3 SCCP –Routing label format in API_MSG_TX_REQ id

SCCP can now optionally indicate the routing label format in the id field of API_MSG_TX_REQ messages. This is achieved when using config.txt by setting bit 2 in the <options2> parameter of the SCCP_CONFIG command. For message-based configurations set bit 2 (SCPX2F_PC_SIZE) in the 'ext2_options' field of the SCP_MSG_CONFIG message.

When enabled the id field in the API_MSG_TX_REQ message will be set to 0 for 14-bit, 1 for 24-bit and 2 for 16-bit point codes.

3.4 TCAP - Maximum instance now 255

TCAP now supports instance values in the range 0 to 255. When using config.txt, the TCAP instance is configured using the <tcap_inst> parameter in the TCAP_CONFIG command.

3.5 TCAP – Unnecessary use of large messages

TCAP now only attempts to allocate large messages when the payload exceeds 320 bytes. Previously, when large messages were available TCAP would allocate them in places where it was not necessary.

3.6 TCAP – Use of maximum incoming dialogs

This release corrects an issue that prevented TCAP working correctly when configured for maximum (65535) incoming dialogs and zero outgoing dialogs.

3.7   M3UA – MTP label format in RX indications

M3UA now provides an indication of the MTP3 label format (or point code size) in the id field of the API_MSG_RX_IND message. This allows the user part module to determine the format of the MTP3 routing label contained within the message.

Mnemonic	Value	Description
MTPTFR14	0	MTP label contains 14-bit point codes
MTPTFR24	1	MTP label contains 24-bit point codes
MTPTFR16	2	MTP label contains 16-bit point codes

3.8   M3UA – Routing Key Management

This release adds support for M3UA Routing Key Management (RKM) procedures when operating as an ASP. M3UA can now send REG_REQ and DREG_REQ messages and handle the respective REG_RSP and DREG_RSP responses. Further details are available on request.

3.9   M3UA – Max SIF Length

A new parameter enables the size of Signaling Information Field (SIF) in outgoing transfer requests to be checked to ensure that the maximum SIF within the network is not exceeded. When using s7_mgt for configuration, the maximum SIF length is set using the MAXSIF parameter for the CNNCI command in config.txt.

3.10   M3UA – Trace bit for Transfer Requests

A new trace event bit M3U_EVTI_SS7_TX_REQ (bit 16) has been added to the input event mask to enable tracing of MTP-TRANSFER-REQ messages received from the user part.

3.11   M3UA – Updated header file definitions

Some M3UA message types and parameter names have been renamed in order to better reflect their usage. For example the message M3U_MSG_CNF_INT_NA (0x72c4) has been renamed M3U_MSG_CNF_NC to reflect that it is used to configure Network Context parameters. An all cases the original definitions are retained for backwards compatibility.

3.12   M3UA – DPC added to AS indications

This release adds the affected point code to the M3UA AS active and inactive indication messages M3U_MSG_AS_ACT_IND (0x02e0) and M3U_MSG_AS_INACT_IND (0x02e1). When using s7_log the point code is automatically decoded.

3.13 MST – Filter M2PA SNM and SNT messages

This release adds two new bit values for use in the 'ss7_mask' parameter in the MST TAP configuration message (MST_MSG_CFG_TAP). Bit 5 is used to allow receipt of MTP3 Signaling Network Management (SNM) messages and bit 6 is used to allow receipt of Signaling Network Test and Maintenance (SNT) messages when monitoring the M2PA protocol.

3.14 s7_log – Increased Precision Timestamps

This release supports finer granularity in timestamps generated by s7_log. Selecting the –tp command line option will cause timestamps to show microsecond resolution as follows: YYYY-MM-DD hh:mm:ss.uuuuuu

3.15 s7_log – Additional Decode

s7_log provides additional decode of certain messages as follows:

The DPC contained in M3UA AS active and inactive indication messages M3U_MSG_AS_ACT_IND and M3U_MSG_AS_INACT_IND is decoded.

Decode of MTP_MSG_LINK_CONG message now correctly reports congestion status.

TCAP Maintenance Events TCPEV_DLG_TIM_TIMEOUT and TCPEV_EXCESSIVE_DLG_ABORTS are now decoded.

3.16 s7_play – Handling of missing \n (IPY00101131)

This release corrects an issue which could result in s7_play failing to correctly process a message when the line is not terminated by '\n'.

Dialogic
31-Oct-12

Release 5.2.6

1 Overview

This is a maintenance release which adds new MAP and MST features and adds support for 'Drop and Insert' switching for the Dialogic® DSI SS7LD Network Interface Board.

This release adds support for the MAP service 'NotifySubscriberDataModified' and supports additional parameters in the 'ProvideSubscriberLocation' service.

The release also includes corrections and changes to ssdm, ISUP, MAP, M3UA and MST as detailed below.

This release is the first full release since Release 5.2.1 and is fully backwards compatible with that release.

1.1 Applicability

This release is applicable to all users. It includes important corrections for users of the Dialogic® DSI SS7MD Network Interface Board.

This release is validated for use in conjunction with Solaris 10 Update 10 for both SPARC and x86 architectures.

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI Protocol Stacks – MAP Programmer's Manual, Issue 17, Dialogic® DSI Signaling Software – Sigtran Monitor Programmer's Manual, Issue 6.

This release includes an updated ss7.dc7 code file (V1.09) for use with the Dialogic® SS7LD Network Interface Board. Release notes for code files are available separately.

1.2 Resolved Customer Issues

Updates to resolve the following customer issues are included in this release: IPY00100380, IPY00100388, IPY00100422, IPY00100565, IPY00100673 and IPY00100813.

2 New Functionality

2.1 SS7LD – Drop and Insert Functionality

This release adds the ability to perform cross-connects between pairs of T1/E1 interfaces allowing a network facing interface which contains both voice and signaling to be separated into signaling (which is processed locally) and voice which can be passed via the second T1/E1 interface to the media processing card.

Drop and Insert functionality is configured using the existing STREAM_XCON command in config.txt. Use of the 'Drop and Insert' functionality requires both the updated ss7.dc7 (V1.09) code file and the ssdl and s7_mgt binaries.

2.2 MAP - NotifySubscriberDataModified service

Support for the MAP NotifySubscriberDataModified service has been added in accordance with the MAP specification 3GPP TS 29 002 version 10.3.0 (Release 10). The service is MAP-V3 only as defined in the specification.

2.3 MAP – ProvideSubscriberLocation service

Support for the MAP ProvideSubscriberLocation service has been extended to include additional parameters. The implementation is now compatible with the MAP specification 3GPP TS 29 002 version 10.3.0 (Release 10).

2.4 MAP – 'Additional Roaming Not Allowed' Cause

New MAP V3 services error parameters have been added in support of the ProvideSubscriberLocation service. Additionally the new error parameter 'Additional Roaming Not Allowed' Cause is now supported. These new error parameters are enabled for use by all MAP-V3 services supported by the MAP implementation that use the applicable error codes.

2.5 MST – Prevent excessive event indications

To avoid excessive reporting of identical events that can reduce system throughput, MST now issues a maximum of 5 event indications for any event type over a 10 minute period. Further events during the 10 minute period are suppressed.

A count of all events (including suppressed events) is maintained within MST and may be read and optionally reset using a new message MST_MSG_R_ERROR_STATS (0x6e51) as documented in *Sigtran Monitor Programmer's Manual Issue 6*.

3 Other Changes

3.1 ssdm – HSL Link Congestion (IPY00100380)

This release corrects an issue which limited (to 2,000) the maximum number of outstanding (unacknowledged) octets on an HSL link. As a result, links with high latency may have experienced link congestion and reduced throughput.

3.2 ssdm – LSL failure under load (IPY00100813)

This release corrects an issue that under load could cause issues when more than 101 signaling links are in use. An internal queue capacity was incorrectly dimensioned and as a result the built-in flow control mechanism failed, resulting in links failing.

3.3   ssdm - LIU Statistics Gathering

This release corrects a threading issue which could result in the loss of LIU statistics request messages which in turn could result in exhaustion of messages in the software environment.

The condition was triggered either when multiple outstanding requests for LIU statistics are present on the same port or when an LIU was reconfigured whilst an outstanding statistics request was being processed. Both conditions are now handled correctly.

3.4   ssdm - SS7MD board failure diagnostics

ssdm has been enhanced to provide additional diagnostic information upon the detection of an SS7MD board failure.

3.5   ISUP - 8 Bit SLS Operation (IPY00100388)

This release corrects the generation of 8 bit SLS values when using bit 22 of the ext_1_options field for Circuit Group Configuration (ISPX1GOP_SLS8).

3.6   ISUP - Circuit group supervision message type handling (IPY00100673)

On receipt of a Circuit Group (Un)Blocking message or acknowledgement containing an invalid 'Circuit Group Supervision Message Type Indicator' field, ISUP will now generate a Confusion Message with 'cause' set to 110.

3.7   ISUP - BICC Timer Configuration (IPY00100565)

Previously when a BICC variant circuit group was configured, ISUP incorrectly overwrote any user-configured timer values in the associated timer table. This has been corrected so that user-configured timer values are preserved.

3.8   MAP – Generation of Begin Subscriber Activity

When the MAP user specifies MAPPN_dest_ref and MAPPN_orig_ref parameters together with MAP-V1 application context parameter in a MAP-OPEN-REQ message, the MAP module automatically sends a Begin Subscriber Activity (BSA) component to TCAP. Previously if the user also included the MAPPN_ellipsis parameter in the message the MAP binary could terminate. This issue has been corrected.

3.9   M3UA - 8-bit SLS values with 5-bit rotation (IPY00100422)

This release corrects the operation of SLS rotation to ensure that when operating with 8-bit SLS values and 5-bit SLS rotation the most significant bits of the SLS are preserved rather than being set to zero.

3.10   MST – Unrecognised SCTP payloads

Messages for SCTP payloads other than M2PA, M3UA or SUA are now discarded without generating event reports or selective traces. These messages (eg H.248) are now counted in the 'Unknown format' counter of the MST Module statistics message.

Dialogic
24-Jul-12

Release 5.2.1

1 Overview

This release is a feature release which adds support for the Dialogic® DSI SS7LD Network Interface Board. The board is a low cost PCIe board intended for low density (up to 4 SS7 links) deployments; it is a half length, full height board for use under Linux or Solaris.

Other new features include: support for up to eight SS7MD boards in a single server, support for Solaris 10 Update 10, protocol enhancements within SCCP, TCAP and MAP and enhancements to MST to support monitoring of messages that exceed 320 octets in length. The release also includes OA&M enhancements within the gctload, s7_log, s7_play and s7_mgt utilities.

The release also includes a number of minor corrections and changes as detailed below.

This release is the first GA release since Release 5.1.6 and is fully backwards compatible with that release.

1.1   Applicability

This release is suitable for all users.

This release is validated for use in conjunction with Solaris 10 Update 10 for both SPARC and x86 architectures.

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI Protocol Stacks – SCCP Programmer's Manual, Issue 9,
Dialogic® DSI Protocol Stacks – TCAP Programmer's Manual, Issue 12,
Dialogic® DSI Protocol Stacks – MAP Programmer's Manual, Issue 16,
Dialogic® DSI Protocol Stacks – M2PA Programmer's Manual, Issue 4,
Dialogic® DSI Protocol Stacks – M3UA Programmer's Manual, Issue 7,
Dialogic® DSI SS7MD Board – Programmer's Manual, Issue 4
Dialogic® DSI SS7HD Board – Programmer's Manual, Issue 11

This release includes an updated ss7.dc4 code file (V5.12) for use with the Dialogic® SS7HD Network Interface Board and the ss7.dc7 (V1.08) code file for use with the Dialogic® SS7LD Network Interface Board. The release notes for the code files are available separately.

This release includes an updated SNMP M3028_6_2 MIB package (V2.02) which includes support for the Dialogic® DSI SS7G41 Signaling Server.

1.2   Resolved Customer Issues

Updates to resolve the following customer issues are included in this release: IPY00093617, IPY00094595, IPY00099532 and IPY00099607.

2   New Functionality

2.1   Support for SS7LD Board

This release adds support for the Dialogic® DSI SS7LD Network Interface Board. It includes a new binary SSDL and a new code file ss7.dc7 specifically for use with SS7LD boards.

Full details of the operation of the SS7LD Board are provided in the *Dialogic® DSI SS7LD Network Interface Board Programmer's Manual, Issue 2* which should be read in conjunction with the ss7.dc7 code file release notes.

NOTE: When using multiple SS7LD boards in a single server, for correct operation, it is essential to ensure that the address switch on each board is set to a different value (irrespective of the addressing mode in use).

2.2   SS7MD – Support for up to 8 Boards in a Server

This release extends the number of SS7MD boards which can be supported in any individual server from four to eight.

2.3   GCTLOAD – Enhanced Status reports

This release includes updates to gctload to provide additional information when run with the −t option to provide status reports. All status reports now include the date and time in the output.

The gctload −t1 output now includes additional measurements which may optionally be reset by the user using the command "gctload −t1r" which will display the current values and then reset the new measurements. The new measurements are the maximum number of messages allocated in each partition since reset and the number of congestion events since the last reset. In addition the time of the last congestion onset and the time of maximum message allocation (since reset) are both displayed.

The gctload −t3 output has been modified and now includes the process id of the last process to read from the message queue.

2.4   SCCP – Per-RSP Configuration of SIO/SSF

To allow use of different Sub Service Field (SSF) values across a network, SCCP now allows optional configuration of the Service Indicator Octet (SIO) on a per RSP basis. When using s7_mgt for configuration, this is achieved using the new optional parameter <ssf> in the SCCP_SSR command:

SCCP_SSR <ssr_id> RSP <remote_spc> <flags> <pc_mask> [<ssf>]

Note: The use of multiple SSF values requires appropriate capabilities in the underlying MTP3 link set configuration.

2.5   SCCP – Disable UDTS generation on routing failure

A new option allows the user to prevent SCCP from automatically generating a UDTS/XUDTS response when it is unable to route a message. When using s7_mgt for configuration, this is achieved by setting bit 1 in the <options2> field of the SCCP_CONFIG command.

SCCP_CONFIG <local_spc> <ssf> <options> [<options2> [<partner_id> <instance>]]

Note: The <options2> field was previously called <management_options> the operation of bit 0 remains unchanged from previous versions.

2.6   SCCP - Connection Oriented Configuration

s7_mgt now supports configuration of SCCP Connection Oriented operation using config.txt.

Connection Oriented operation is activated by setting bit 31 in the <options2> parameter of the SCCP_CONFIG command. This will result in s7_mgt using the following fixed parameter values in the SCP_MSG_CONFIG message:

Parameter	Value
num_uc	2048
uc_onset	1536
uc_abmt	1024
base_id	1024
top_id	2047
min_id	0
max_id	2047

2.7   SCCP / M3UA – Support for 16 bit Point Codes

SCCP can now be configured to operate with 16 bit Point Codes as used in Japan. This mode of operation is selected by setting bit 15 of the 'ext_options' parameter in the SCCP Module Configuration message (SCP_MSG_CONFIG) or setting bit 31 in the <options> field of the SCCP_CONFIG command in config.txt. When using 16 bit point codes, users should ensure that compatible options are selected for the MTP3 or M3UA layers.

M3UA can now be configured to operate with 16 bit point codes for use in Japan. This option is selected by setting the SS7MD parameter to ITU16.

2.8   SCCP – Segmentation/Re-Assembly for XUDTS

This release extends segmentation and re-assembly functionality to include XUDTS messages. SCCP now handles segmentation and re-assembly for XUDTS messages in the same manner as XUDT messages.

2.9   TCAP - Include TCAP Version in outgoing messages

This release adds an option to force the TCAP module to include TCAP Protocol Version information in the messages it sends to SCCP. The TCAP Version information sent for ITU identifies Q.771-5 1997 (and 1993) specifications and for ANSI T1.114 1996.

This option is enabled by setting bit 12 of the 'options' parameter in the TCAP_MSG_CONFIG message or bit 12 of the <options> field in the TCAP_CONFIG command in config.txt.

2.10 MAP – Additional parameters for SMSC services

Support for the following parameters has been added within MAP:

Parameter	Mnemonic	Value (dec)	Value (hex)
Additional Alert Reason Indicator	MAPPN_add_alert_reason_ind	586	0x24a
SM Delivery Not Intended	MAPPN_sm_deliv_notintended	587	0x24b
IP SM GW Indicator	MAPPN_ip_sm_gw_ind	588	0x24c
IP SM GW Delivery Outcome	MAPPN_ip_sm_gw_deliv_outcome	589	0x24d
IP SM GW Absent Subscriber Diagnostic SM	MAPPN_ip_sm_gw_abs_sub_diagsm	590	0x24e

The parameters are used within the following services; full details are contained within the MAP Programmer's Manual:

SendRoutingInfoForSM service (MAP v3)
InformServiceCentre service (MAP v3)
ReportSMDeliveryStatus service (MAP v3)
ReadyForSM service (MAP v3)

2.11 M3UA - Audit for Congested Destinations

This release extends the destination audit mechanism to include periodic auditing of a congested destination following receipt of SCON from a Signaling Gateway.

2.12 MST – Long Message Support

This release supports the ability to pass messages containing between 321 and 4200 payload octets to the user without truncation. Previously messages were truncated at 320 octets. The new functionality is enabled by setting bit 0 in the 'options' field of the MST configuration message (MST_MSG_CONFIG). Users must also ensure that sufficient long messages are created using the NUM_LMSGS command in the system.txt file.

2.13 MST – License Capacity Alarm

In the event that the actual data throughput through the MST module exceeds an onset threshold of 80% of the licensed capacity the module will generate an alarm using the MGT_MSG_LIC_EVENT message with 'event_type' set to value 4 (Throughput Alarm) and 'event_indicator' set to value 1 (Alarm Active). When the throughput reduces below an abatement threshold (40% of the licensed capacity) the clearing of the alarm is indicated by the same message but with the 'event_indicator' set to value 0 (Alarm Inactive).

2.14   s7_log - Daily log files

A new option has been added to s7_log for use when rolling log files are enabled to cause a new file to be started the first time a new event is logged each day. This functionality is enabled by adding the new –r option (in conjunction with the –n option). This behavior applies to both text and PCAP format log files. For example:

s7_log -ffilename.log -n10 –r -s10000

3   Other Changes

3.1   SS7HD & SPCI Device Drivers for 64 bit Solaris x86 (IPY00099607)

This release corrects an issue with the device drivers for SS7HD and SPCI boards that could result in memory corruption and subsequent kernel panic when running on 64 bit versions of the Solaris x86 kernel.

3.2   ssdm - In Service Duration Statistics Revised (IPY00093617)

The In Service Duration reported for MTP2, Q.SAAL and ATM running on the SS7MD board has been changed to units of 100ms for compatibility with other boards.

3.3   ssdm –Board Statistics and Event Reports

A number of minor corrections have been made to statistics gathering for the SS7MD board including: preventing negative values at initialization, preventing corruption of MTP2 statistics when reading layer 1 statistics and correcting the OOS and PRBS measurements in the LIU statistics.

This release prevents generation of multiple consecutive ATM Stream State 'Out of Service' indications and corrects the algorithm for reporting AAL5 frame errors.

3.4   GCTLIB - GCT_pending_msgs()

This release changes the operation of the GCT_pending_msgs() function to ensure that the DSI environment is up and running before attempting to access it. Previously a segmentation fault was possible if an application called GCT_pending_msgs() when gctload was not running.

3.5   MTP2 / Q.SAAL - Configurable trace_id

The SS7MD, SS7LD and SS7HD boards now support MTP2/Q.SAAL tracing to the alternative <trace_id> as specified using the TRACE_MOD_ID command in config.txt. For the SS7HD board this requires the use of ss7.dc4 V5.12 or later and for the SS7LD board this requires the use of ss7.dc7 V1.08 or later.

3.6   TCAP - Receipt of TCAP Abort

A fault has been corrected where, under certain conditions, received TCAP Abort messages were reported to the TCAP User as P-ABORT rather than U-ABORT.

3.7   TCAP - User Information in P-ABORT-IND

TCAP, when operating in ITU-T mode, has been enhanced to report User Information from a received TC-P-ABORT Dialogue Portion to the user in the 'TCPPN_USER_INFO' parameter which is now optional for this message. Previously User Information was only reported for TC-U-ABORT.

3.8   MAP - Accept MAP Refuse PDU from a TCAP P-ABORT

This release detects and decodes User Information contained in received P-ABORT-IND messages. If the information is for a MAP-Dialogue PDU with Refuse Info reason = 'invalidDestinationReference' or 'invalidOriginationReference', the module will send a MAP-OPEN-CNF message to the MAP-User setting the appropriate MAPPN_refuse_rsn and with MAPPN_result = 'dialogue refused' (1).

This results in a received MAP Dialogue Refuse PDU being reported to the MAP-User in the same way, whether reported by TCAP as a P-ABORT or a U-ABORT.

3.9   MAP - Reports timeout on Abort from TCAP

The TCAP module has an option (TCPF_DLG_TIM_ABORT) that will automatically abort dialogues after a timeout period. MAP has been updated to recognise these aborts and close the associated MAP dialog. When this happens MAP will send a MAP-DIALOGUE-IND, MAP-P-ABORT-IND message to the MAP-User with the new provider reason (MAPPN_prov_rsn) = MAPPR_idle_timeout (7).

3.10   MAP - Diagnostic corrected when L_REJECT received

An invalidly formatted response message causes TCAP to send an L_REJECT message (problem code = Badly Structured Component) to MAP and MAP will then send a MAP-NOTICE-IND message with a problem diagnostic (MAPPN_prob_diag) to the MAP-User. Previously MAP reported the problem diagnostic 'Response Rejected by Peer' (1) with the Notice message. This has been corrected for this release to report the problem diagnostic 'Abnormal Event Received from Peer' (2).

3.11   MAP - ASN.1 BIT STRING encodings

This release ensures that sufficient parameter octets are available to convey the maximum amount of ASN.1 BIT STRING encoded data required by the MAP specifications. Previously some parameters only supported a single octet which was insufficient.

The MAPPN_mwd_status parameter (which is the only parameter encoded/decoded within the MAP module) now always sends six ASN.1 BIT STRING encoded bits but will support receipt of three, four or six bits of validly formatted ASN.1 BIT STRING data.

3.12   SCTP/SCTPD - Detection of path recovery

This release improves detection of SCTP path failure and restoration in a multi-homed environment. It corrects an issue which in specific circumstances resulted in failure to detect path recovery. Previously if path failure was detected by lack of acknowledgement to a DATA element and no subsequent DATA elements were transmitted then path recovery was not detected. Transmission of a subsequent DATA element cleared the issue.

3.13   SCTP/SCTPD - Receipt of INIT on an active association

This release corrects operation upon re-initialisation of an SCTP association that has not been closed (ie. receipt of an INIT whilst association is active) which previously caused the module to fail.

3.14   M2PA – Link Configuration Defaults

The M2PA Link Configuration message (M2P_MSG_LINK_CONFIG) now allows timer values and congestion thresholds to be set to their default value by setting the corresponding field in the message to zero. Default values are defined in the *M2PA Programmer's Manual Issue 4*.

3.15   M2PA – Timer Operation

This release corrects an issue with M2PA timers that could cause incorrect timer duration. In addition T3 operation has been corrected so that on expiry (during the proving period), the alignment cycle is aborted and the links goes into the Out Of Service state.

3.16   M2PA – Link Statistics Duration Counters

Minor corrections have been made to the generation of duration values (stats_duration & cong_duration) in the M2PA Read Statistics Request (M2P_MSG_R_STATS).

3.17   M2PA – Message retrieval

This release includes a correction to ensure that all messages can successfully be retrieved following a link failure. Previously messages received from MTP3 after a link had failed were not buffered and could not be retrieved.

3.18   MST – Recovery from lost connection

The algorithm used for in-sequence message delivery has been corrected to ensure immediate recovery following loss of an association.

3.19   MST – Measurements and Event Indications

A number of minor corrections have been made to the MST statistics gathering mechanism within the MST_MSG_R_STATS, MST_MGS_R_THR_STATS and MST_MSG_R_ASSOCIATION_STATS messages.

Within the MGT_MSG_LIC_EVENT message, the 'protocol_type' is now correctly set to the value 5 (LICMOD_MST) to allow the recipient to determine the source of the event.

3.20   s7_mgt - HSL <data_rate>

In previous releases, s7_mgt would incorrectly configure the system where the MTP_LINK or MONITOR_LINK commands for HSL links omitted the <data_rate> parameter. Where the <data_rate> parameter is omitted, information from the LIU_CONFIG command will now be used.

3.21   s7_mgt - INAP_FE command

In previous releases, the INAP_FE command did not configure the module ID for the local FE correctly. s7_mgt now uses the module ID of the LSS associated with the SSN which is encoded in the <sccp_address> parameter.

3.22   s7_mgt - MTP3 with alternate module ID

This release corrects a problem, when the CNOPS command was used to configure an alternative module_id for the MTP3 module, but the link activation request message was sent to the default module ID for MTP3.

3.23   s7_play – module_id configuration

s7_play now allows the module_id that it uses for its input queue to be modified dynamically during execution of a playback file. A new "R" command can be used within the playback file to configure the module_id that s7_play uses for subsequent message reception. The command takes a single 16 bit parameter designated –m as follows:

```
R-m002d
```

3.24   s7_play – Waiting forever

This release prevents s7_play waiting forever for a response to a message that it failed to send. In the event that during execution of the "W" command GCT_send() fails, s7_play now reports an error and terminates.

3.25   s7_log – Additional decode (IPY00099532)

s7_log now fully decodes the MGT_MSG_LIC_EVENT message.

When decoding the M3U_MSG_NOTIFY_IND message, s7_log now only displays the ASP identifier when present in the message. Previously "ASP=0" was displayed when the ASP identifier was not present.

s7_log will now log messages traced from the MTP3 to MTP2 interface on the SPCI board to the PCAP log file. These messages are of type SS7_MSG_TX_REQ and were not previously mapped to PCAP format.

3.26   dsistat - M3UA, TCAP & LIU Status (IPY00094595)

dsistat has been enhanced to report TCAP resource and TCAP dialog status. Handling of the id value for when requesting the status of an M3UA Remote Server has been corrected and additional LIU measurements for bit errors and code violations are displayed.

3.27   dsitrace - M3UA and AAL5 Tracing

dsitrace has been enhanced so that it can be used to activate ATM AAL5 tracing. The default trace mask for M3UA used by dsitrace has been modified to trace API_MSG_TX_REQ and API_MSG_RX_IND messages. Previously the input and output mask were by default set to 0 requiring a user to always specify which messages should be traced.

3.28   MTU – More messages to send flag

This release includes a correction within the MTU example application for the setting of the 'more messages to send' flag when sending an SMS. In addition there is a correction to the address setting in the TP-OA parameter.

3.29   MTR - AnyTimeInterrogation

The MTR example application in the User Part Development package has been updated to include support for the MAP AnyTimeInterrogation service.

Dialogic
22-Mar-12
Revised 31-Mar-12

Release 5.1.6

1 Overview

This release is a maintenance release containing important updates relating to SCTP/SCTPN, MST and RSI functionality and routine protocol updates to TCAP and MAP protocols. Full details of all changes and corrections are shown below.

This release is fully backwards compatible with the previous release.

1.1   Applicability

This release is suitable for all users, in particular MST users are advised to upgrade to this release to avoid a potential issues with system congestion handling.

This release is validated for use in conjunction with Solaris 10 Update 9 for both SPARC and x86 architectures.

Users of Sigtran software are advised of an issue within the Solaris kernel implementation referenced by Oracle Solaris Bug ID 6598652 (Potential SCTP receive dead lock with zero window) which is addressed by installing Oracle patch 144488-06 for SPARC users or 144489-06 for x86 users.

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI – Software Environment Programmer's Manual, Issue 9, Dialogic® DSI Protocol Stacks – MAP Programmer's Manual, Issue 15, Dialogic® DSI Signaling Software – Sigtran Monitor Programmer's Manual, Issue 5.

2   New Functionality

2.1   MST – Management Event Indications and Selective Tracing

MST generates a Selective Trace indication whenever a formatting error is detected within the received packet. This release introduces additional, more specific, reasons for the formatting error and generates an additional event report to the management module when a formatting error occurs. The event report uses a new message MST_MSG_EVENT_IND (0x0e4c)

Generation of Selective Tracing and Management Event Indications is now, by default, enabled however this release adds the ability to enable or disable both on a per event basis using a new message which sets the selective trace mask (MST_MSG_SELTRACE_MASK (0x5e50).

Both new messages are documented in the *Sigtran Monitor Programmer's Manual - Issue 5.*

3 Other Changes

3.1   GCTLIB - REDIRECT

The operation of the REDIRECT command has been corrected so that redirection only applies when messages are being sent and does not impact or modify the input queue that a receiving module reads from.

3.2   ssdm – NACK count for monitored links

When monitoring MTP2 Low Speed Links or Q.703 Annex A High Speed Links, changes in the state of the MTP2 Backward Indicator Bit are counted and stored in the NACK_count field of the MTP2 measurements.

3.3   ssdm – VCI/VPI value validation

Value validation for VCI/VPI values has been corrected and some restrictions relaxed. For VPI values a maximum of 4 bits can be set and for VCI values a maximum of 10 bits can be set. The total number of bits set applies across all boards in a system.

For systems where this constraint is too restrictive, further information on VCI/VPI configuration can be supplied on request.

3.4   s7_log – Filename format

s7_log now allows the format of the filename for rotating log files to optionally keep the '.log' extension as the last part of the filename so that the format is maint.2.log (instead of maint.log.2). This is activated by including the –x option on the command line.

3.5   TCAP - Option to stop sent address being replaced by received address

This release adds an option to force TCAP to always use the original Called Party Address throughout an outgoing dialogue rather than allowing it to be replaced by the address received in the first response received from the far end.

To activate this feature, bit 11 of the <options> parameter in the TCAP_CONFIG command should be set to 1.

3.6   MAP - Selective Tracing enabled by default

Selective Tracing within MAP, as documented within the MAP Programmer's Manual, is now enabled by default for all events. If required the MAP_MSG_S_SELTRACE_MASK message can be used to modify which events are selectively traced.

3.7   MAP - GPRS Node Indicator parameter support

MAP services SendRoutingInfoForLCS and SubscriberLocationReport now support the GPRS Node Indicator parameter, MAPPN_gprs_node_ind (123).

3.8   MAP - Correction to Ellipsis parameter processing

Unrecognised parameters in received MAP messages are stored in the MAP Ellipsis parameter (MAPPN_ellipsis). This release corrects a problem (for some services including CHECK_IMEI) that previously caused only the first unrecognised parameter to be stored. A potential problem with ellipsis parameter formatting has also been corrected.

3.9   MAP - TC-REJECT component parameters passed to user

On receipt of a valid TCAP REJECT component from the network, MAP now uses two new parameters to pass additional TCAP component data to the MAP user for diagnostic purposes.

MAPPN_tcap_rej_problem_code (584) contains the Problem Code (0 to 7) of the REJECT component and MAPPN_tcap_rej_problem_type (585) contains the Problem Code tag that was used (0x80 to 0x83). The interpretation of the problem code value is dependent on the tag used.

Reception of a valid REJECT component will cause a MAP-NOTICE-IND dialog message or a MAP-SERVICE-CNF message (with error parameter) to sent to the MAP-User. In both cases the two new parameters will now be returned in the messages. For the MAP-NOTICE-IND message, the existing parameter MAPPN_invoke_id (14) will now also be returned with the new parameters to identify the component referenced by the REJECT (MAPPN_invoke_id is already returned by the MAP-SERVICE-CNF message).

3.10   MAP - ASN.1 indefinite length termination octets being returned in ellipsis data

When MAP encounters unrecognised data in received messages, it is returned to the MAP-User in the Ellipsis parameter. In the previous releases where the unrecognised data has been encoded using ASN.1 indefinite length encoding, it is possible for length termination octets 'EOC' (two 0x00 octets) to be returned at the end of the Ellipsis parameter data. This release corrects the fault. Ellipsis parameter data will not be incorrectly terminated by indefinite length encoding termination octets.

3.11   MAP - Begin Subscriber Activity with single address

For previous releases if the MAP-User specified only one of MAPPN_dest_ref (2) and MAPPN_orig_ref (4) parameters, sending of the BEGIN-SUBSCRIBER-ACTIVITY (BSA) service would be attempted and fail with MAPSWE_TX_FMT_ERR being reported. This has been corrected so that if only one of the parameters is present, it is ignored and the BSA component is not sent.

3.12   MAP - MAPPN_unk_sub_diag in MAP NOTE-MM-EVENT service

MAP now allows the optional parameter MAPPN_unk_sub_diag (61) to be used in the response for the MAP NOTE-MM-EVENT service when a User Error of 'Unknown Subscriber' is returned.

3.13 MAP - User and Provider Errors supported for all services

MAP now allows the error parameters MAPPN_user_err (21) and MAPPN_prov_err (22) in all MAP services that return a response to the MAP-User.

3.14 SCTP - Long Heartbeat Memory Leak

This release corrects an issue where a received Heartbeat message in excess of 300 bytes would cause a memory leak within the SCTP association and eventually lead to association failure requiring module restart.

3.15 SCTP / SCTPN / s7_log - Event Indications

SCTP and SCTPN now generate event indications to management whenever the state of an association or a path within an association changes. The messages (SCTP_MSG_STATUS_CHANGE, SCTP_MSG_NETWORK_STATUS & SCTP_MSG_CONG_STATUS) are identical in format to the messages documented within the *SCTP Programmer's Manual* which are issued to the SCTP user. The events are fully decoded by the updated s7_log binary.

3.16 SCTPN – Preventing unnecessary Tx message discard

This release contains corrections to SCTP transmit operation to prevent unnecessary message discard as the underlying transmit buffer reaches capacity.

3.17 MST - Failure to recover from System Congestion

This release corrects a problem which previously could cause failure of MST to recover from system congestion. It also ensures that the 'instance' field is correctly set in messages issued to the application.

3.18 RSI – Stall at High Traffic Rates

This release corrects a problem which could result in RSI stalling at very high traffic rates, causing the system message pool to be exhausted.

Dialogic
05-Aug-11
Revised 02-Mar-12

Release 5.1.5

1 Overview

This release is a maintenance release containing important updates relating to the SS7MD board as well as new M3UA and INAP API functionality. The release also includes other changes and corrections as detailed below.

1.1   Applicability

This release is suitable for all users, in particular SS7MD users are advised to upgrade to this release to avoid potential issues including board failure.

This release is validated for use in conjunction with Solaris 10 Update 9 for both SPARC and x86 architectures.

Users of Sigtran software are advised of an issue within the Solaris kernel implementation referenced by Oracle Solaris Bug ID 6598652 (Potential SCTP receive dead lock with zero window) which is addressed by installing Oracle patch 144488-06 for SPARC users or 144489-06 for x86 users.

This release is generally backwards compatible with the previous release, however, INAP API library users should read the section on Ellipsis handling and note the corrected AIN tags.

1.2   Resolved Customer Issues

Updates to resolve the following customer issues are included in this release: IPY00093295.

2   New Functionality

2.1   INAP API - New AIN protocol services

This release adds three new services (ResourceClear, TerminationAttempt and SendNotification) for the AIN protocol - GR-1299-CORE. Further details on the parameter coding for these services is available on request.

2.2   M3UA - SLS Rotation – 8 bit option

The 'options' field of the M3U_MSG_CNF_INT_NA message has been extended to support a new option which allows full 8 Bit SLS rotation. Bit 0 should be set to one to activate SLS rotation. When SLS rotation is activated, 'options' bit 1 is set to one to select 8 bit SLS rotation or set to zero for default SLS rotation based on MTP label format.

When using config.txt for configuration the 'options' field is set when configuring a Network Context using the OPTIONS parameter of the CNNCI command. When using the OPTIONS parameter the ROTATION parameter is no longer required and must not be used.

The revised syntax of the CNNCI command is as follows:

CNNCI:ss7md=<variant> [,options=<options>];

2.3   M3UA - Selective Tracing

M3UA operation has been enhanced to automatically generate a trace of any received message that results in generation of an M3U_MSG_M3U_EVENT (0x02ee) event indication. The trace is intended to assist with problem diagnosis and is sent to the trace module id (0xef by default but may be configured with the TRACE_MOD_ID <trace_id> command)

3   Other Changes

3.1   Software Installation

Two changes have been made relating to software installation to remove potential for errors.

The example system and protocol configuration files supplied with the Development Package have been renamed 'example_system.txt' and 'example_config.txt' respectively. This is intended to prevent customer modified configuration files getting deleted when the package is updated.

Previously it was necessary for the user to manually set the file permissions for the MST binary to ensure that it runs with root privileges. The Development Package installation procedure now sets the file permissions automatically so there is no need for manual intervention.

3.2   SS7MD - Multi-Clock Domain Code File

In previous releases, the SS7MD code file that includes support for multiple clock domains (ss7mcd.dc6) contained incorrect firmware. This has been corrected. All users of the SS7MD board that do not require the timeslot switching capability offered by the ss7.dc6 code file should use the ss7mcd.dc6 by default.

3.3   SS7MD – SSDM improvements

This release includes improvements to ssdm and the device driver for the SS7MD board to prevent premature board shutdown or board failure indications during periods of host congestion. The SSDM binary includes additional diagnostic capabilities to assist with factory diagnosis of field issues.

Operation of the MVD_MSG_LIU_STATUS and LIU_MSG_R_STATE messages have been corrected to ensure the correct line interface status is always reported.

3.4   s7_mgt – GT with ITU 24 Bit point codes

This release corrects an issue that previously prevented Global Title configuration when using 24bit ITU-T format point codes.

3.5   TCAP - ASN.1 non-minimal length encodings

The TCAP specification Q.773 states that when ASN.1 encoding messages, length encodings should use as few as possible octets, e.g. encodings such as 0x8174 and 0x820074 should both be sent as 0x74. Previously the TCAP module would reject received network messages that did not conform to this rule. This restriction has been relaxed to accept messages that use ASN.1 non-minimal length encoding. Outgoing messages are always encoded in accordance with the TCAP specification using the minimal length for ASN.1 lengths.

3.6   TCAP - Overlength outgoing messages

In the event that a message exceeds the maximum size for transmission to the network, TCAP will now discard the whole message and abort the dialogue. Previously in some situations just the dialogue portion was discarded resulting in a malformed message being sent to the network.

3.7   TCAP - Abort with User Abort Information

When sending an ITU-T TCAP Abort message containing the User-Abort-Information parameter, any additional dialogue portion is discarded to ensure valid formatting of the outgoing message.

3.8   MAP - Maximum size of user UESBI data

To align with the MAP specification, the maximum size of UESBI data has been reduced (from 128 to 16 octets). This affects the MAPPN_uesbi_iua and MAPPN_uesbi_iub parameters.

3.9   MAP – Additional error codes

MAP now supports the following user error codes:

MAPUE_unknown_MSC (3)
MAPUE_no_handover_number_available (25)
MAPUE_subsequent_handover_failure (26)
MAPUE_forwarding_failed (47)

3.10   MAP - Missing mandatory parameters in user response data

MAP now checks for missing mandatory parameters when the MAP-User enters response data. For previous releases it was only request data that was checked for missing mandatory parameters. The check now applies to both request and response primitive entry using the MAP_MSG_SRV_REQ message. Reporting of missing parameters is unchanged (from request checking): a MAPSWE_USER_MAND_MISSING error is reported in a MAP_MSG_ERROR_IND message and the number of the first mandatory parameter not found is given in the parameter data.

3.11   MAP – Handling of segmented Result components

In the event that reassembly of partial response data fails (for TCAP segmentation using TC-RESULT-NL and TC-RESULT-L messages), instead of simply discarding the previously stored data, MAP will abort the affected InvokeID.

If abort occurs after a TC-RESULT-NL message, U-CANCEL is sent to TCAP, followed by MAP_CNF with a Provider error to the MAP-User and finally a U-REJECT to TCAP. Aborts that occur after a TC-RESULT-L message will just send the MAP_CNF message with Provider error. The Abort may be caused by parameter format checks or exhaustion of the buffer space. Exhaustion of the buffer space is also reported using MAPSWE_TC_RESULT_NL_TOO_BIG.

In addition this release modifies the processing of the SendParameters service so that response data received in multiple messages (one or more TC-RESULT-NL messages followed by a TC-RESULT-L) is correctly handled.

3.12   MAP – Invalid user-supplied Invoke id in response

If MAP receives an unknown Invoke ID in a response primitive in the MAP_MSG_SRV_REQ message, a software event report will now be generated. The event report uses the MAP_MSG_ERROR_IND message with error code MAPSWE_USER_INVOKE_ID_UNKNOWN (27) with the id field set to the UserDialogID and the first Diagnostic code set to the invalid InvokeID. MAP will also optionally generate a selective trace message with trace reason code MAPt_user_invoke_id_unknown (16).

3.13   INAP API - Correction to certain AIN tag values

Three tag values, used for existing AIN services have been corrected as follows:

Parameter	Affected AIN Services	Previous TAG	Corrected Tag
AINPN_GenericName (551)	AnalyzeRoute	0xa1	0x9f, 0x21
AINPN_TriggerInformation (24)	InfoAnalyzed, InfoCollected	0x9f, 0x21	0x9f, 0x81, 0x21
AINPN_AMABillingFeature (65)	AnalyzeRoute, Disconnect, SendToResource	0x9f, 0x3a	0x9f, 0x58

3.14   INAP API - Ellipsis processing for CAMEL protocols (IPY00093295)

For this release, decoding of ellipsis has been changed for CAMEL services that define additional parameters following the ellipsis. For these services any unknown data in a received message will always be placed in the ellipsis parameter as if it was located at the end of the message. The following services are affected by this change:

• CAP v2 InitialDP

• CAP v3 InitialDPSMS

- CAP v3 InitialDPGPRS

- CAP v3 ApplyChargingReportGPRS

- CAP v4 EstablishTemporaryConnection

- CAP v4 Connect

- CAP v4 InitialDPSMS

- CAP v4 InitialDPGPRS

- CAP v4 ApplyChargingReportGPRS

3.15 INAP API - IN_decode_error() AIN op code handling

The API function IN_decode_error() now correctly supports operation codes greater than 256 which is particularly important for AIN operations where operation codes are always greater than 256. Previously only the least significant 8 bits were recovered.

3.16 M3UA - Management error messages

Management error messages received from an M3UA peer contain a range of 'Tags', some of which were erroneously being rejected. The module has been updated to accept all tags that can be present. In addition the range of error codes allowed has also been extended.

3.17 M3UA - MBM local traffic mode

A backwards compatibility issue for systems where MBM configuration messages are still used has been rectified. The issue affected systems using message based configurations where the 'local traffic mode' was set using the MBM_MSG_CFG_AS (0x72f7) message. The traffic mode was not sent in ASP-ACTIVE requests to the peer, but has now been rectified.

3.18 M3UA - Multiple 'DOWN' indications

In the previous release M3U_ASS_STATUS_DOWN indications were repeated during association activation until the remote end became active. In this release a single 'DOWN' indication will be generated when the association is activated, and any retries will not be reported.

Dialogic
17-Jun-11

Release 5.1.3

1 Overview

This release is a full release containing a number of important corrections relating to the operation of the SS7MD board. It also includes new functionality and important changes to SCTP, M3UA, MST and RSI.

This is the first generally available release since Release 5.0.6 and it is fully backwards compatible with that release.

1.1   Applicability

This release is suitable for all users.

This release is validated for use in conjunction with Solaris 10 Update 7 for both SPARC and x86 architectures. It may also be used with Solaris 10 Update 9 although this combination has not yet been fully validated.

Due to the important corrections included in this release, all users of the SS7MD card should upgrade existing deployments to this release as soon as practical in order to avoid potential issues including board lock-up.

All users of the Sigtran Monitoring software (MST) should also upgrade to this release to avoid potential message loss of some M3UA messages.

Users of Sigtran software are advised of an issue within the Solaris kernel implementation referenced by Oracle Solaris Bug ID 6598652 (Potential SCTP receive dead lock with zero window) which is addressed by installing Oracle patch 144488-06 for SPARC users or 144489-06 for x86 users.

1.2   Resolved Customer Issues

Updates to resolve the following customer issues are included in this release: IPY00092738, IPY00092143, IPY00091767, IPY00092119.

2   New Functionality

2.1   SS7MD – Use of Protected Monitoring Points

This release enhances SS7MD support for monitoring by introducing a new mode of operation for use when attaching to a Protected Monitoring Point (PMP). In this mode the receiver sensitivity of the E1/T1 interfaces on the SS7MD is increased to compensate for the loss introduced by the PMP.

The new mode of operation is selected using the 'liu_type' parameter in the LIU_CONFIG command in config.txt. When monitoring using a PMP 'liu_type' should be set to 8 for E1 interfaces and 9 for T1 interfaces.

When connecting to a PMP this should be the preferred mode of operation.

2.2   ssdm – Enhanced Tracing Capabilities

This release adds support for tracing of messages received from the SS7MD board when in AAL5 monitoring mode. Tracing is enabled at run-time by setting Trace Masks using a new message ATM_MSG_TRACE_MASK. Further details are available on request.

2.3   MST - Traffic Filtering

The TAP configuration message (MST_MSG_CFG_TAP) has been updated to allow monitored traffic to be filtered according to the SS7 event mask (**ss7_mask**) and SIGTRAN event mask (**stn_mask**) parameters.

The MGT_MSG_CFG_TAP **options** parameter settings are:

Bit 0 – When set traffic will be monitored if it meets selection criteria within both the SS7 event mask and the SIGTRAN event mask. When bit 0 is not set traffic will be monitored if it meet at least one selection in one of the masks.

Bits 1-31 – Reserved for future use and should be set to zero.

2.4   MST - Enhanced Tracing Capabilities

This release adds support for tracing of messages and events received and generated by MST. Tracing is enabled at run-time by setting Trace Masks using a new message MST_MSG_TRACE_MASK. Further details are available on request.

In addition, MST will also automatically report any badly formatted messages received from the network using the Selective Trace mechanism.

2.5   SCCP - Ability to receive messages for any DPC

This release adds the ability for local sub-systems to receive Connectionless SCCP messages irrespective of the DPC contained within the message. This is achieved by a run-time configuration option associated with the Local Sub-System (LSS) which allows received messages for any DPC not explicitly configured to be sent to that LSS.

This functionality is enabled when configuring a LSS by setting bit 4 (SSRF_ANY_PC) in the ssr_flags parameter of the SCP_MSG_CNF_SSR (0x7741) message. When using config.txt this is achieved by setting bit 4 in the <flags> field of the SCCP_SSR command.

2.6   RSI - Link Statistics

This release adds the ability to read back measurements from the RSI module on a per link basis. A new message RSI_MSG_R_LNK_STATS (0x6f87) has been defined for this purpose. Full details are available on request.

The measurements can also be read using the dsistat command line management utility using the following command syntax:

```
dsistat RSIL STATS 0
```

For full command syntax run dsistat with the –h option.

2.7   SS7MD – Link status for AAL5 Monitor Links

This release enhances the mechanism for generating IN SERVICE / OUT OF SERVICE indications for an AAL5 Monitored Link so that if the rate of received messages falls below a fixed threshold of 10 messages per second the link is deemed to be out of service. Under normal operating conditions the link management messages will ensure that traffic exceeds this rate. Link state is indicated using the ATM_MSG_LINK_STATE (0x026b) message defined in the SS7MD Programmer's Manual.

3   Changes

3.1   GCTLIB - 64-Bit Library Installation (IPY00092119)

Previous releases did not correctly install the 64-bit GCT library. This has been corrected.

3.2   GCTLIB - Segmentation Fault (IPY00092143)

This release corrects an issue that could potentially result in a segmentation fault when executing GCT_xxx() functions when using GCT_link() and GCT_unlink() to dynamically attach and detach from the DSI environment.

Typically only specialized applications make use of GCT_link()/GCT_unlink() so the majority of deployments are unaffected by this issue.

3.3   ss7.dc6 - SS7MD Monitoring Failures (IPY00092738)

Under certain circumstances, when operating the SS7MD in MTP2 monitoring mode, reception of over-length frames could cause the board to lock-up. Also when operating in AAL5 monitoring mode, reception of CRC errors could cause the board to lock-up. Typically this behavior would have been triggered as a result of errors or frame slips on the E1/T1 interface. The ss7.dc6 code file (V1.12) within this release corrects both these issues.

3.4   s7_log - Additional Decode

s7_log now provides a full decode of all M2PA and M3UA status messages and notifications. In addition when displaying TCAP software events, if an unknown event is encountered it will display the <event_code> as an integer.

3.5   s7_mgt - Board Failure Diagnostics

s7_mgt now forwards SSD event notifications (MGT_MSG_EVENT_IND and MGT_MSG_DIAG_IND) to module_id 0xef (REM_API_ID) to allow the events to be trapped by s7_log.

3.6   ssdm - Reading SS7MD Statistics

This release corrects an issue which, under certain circumstances, could cause statistics request messages (ATM, LIU & MTP2) for the SS7MD board to be rejected or lost.

3.7   ssdm - SS7MD Board Watchdog

This release implements a heartbeat mechanism to ensure rapid detection and shutdown of SS7MD boards in the event of failure.

3.8   ssdm - Failure to free licenses on reset

This release corrects an error in the release of per-link licenses for the SS7MD board when the board is reset which previously could result in exhaustion of licenses following multiple resets of the board.

3.9   SCTP - Bundled chunks (IPY00091767)

This release corrects the handling of multiple SCTP chunks in a single message to ensure that all chunks are correctly delivered to the user. Previously if more than ten chunks were received bundled in a single SCTP message, delivery to the user was not guaranteed.

3.10   SCTP - SCTP_MSG_TX_REQ Invalid Stream

If an invalid stream is passed from the user in a SCTP_MSG_TX_REQ message it will now be rejected with a SCTPE_BAD_PARAM error code rather than be rejected by the remote end after transmission of the message.

3.11   SCTP - Transmit Buffer Allocation

This release increases the number of SCTP Transmit Buffers allocated to reduce the likelihood of entering congestion. Typically two buffers are used for each data message and previously this resulted in congestion being encountered at lower buffer occupancy than intended.

3.12   M2PA – Throughput Licensing

Previous releases of M2PA incorrectly calculated the number of received octets. This has been corrected.

3.13   M3UA - Network Appearance Removal

Prior to this release M3UA would only process a M3U_MSG_UNMAP_NA (0x72cd) message for M3UA links 0-3. This has been corrected and now works for all M3UA links.

3.14   M3UA - Link Deactivation

Operation of the message M3U_MSG_DEACT_ASSOC (0x72cf) which causes an association to shutdown has been changed back to the pre V6.01 operation such that an SCTP_MSG_ABORT (0x728c) is sent to SCTP to requesting an immediate shutdown. This ensures more deterministic behavior.

3.15   M3UA - DAVA causes crash

A problem within M3UA that potentially could cause the binary to crash upon reception of DAVA (Destination Available message) from an SGP has been corrected.

3.16   MST - 'mst_inc.h' Header File

This release includes the header file (mst_inc.h) for the MST Sigtran Monitoring module which was omitted from the previous release.

3.17   MST - M3UA Message Parse Error

Previous releases incorrectly calculated padding bytes following variable length parameters when recovering received M3UA messages. This resulted in some lost messages and an incrementing count in the 'Bad Format' of the per-module statistics. This fault, which typically only impacted messages containing the optional 'Correlation ID' parameter, has been corrected.

3.18   User Part Examples - Support for 64-bit Build

The User Part Development (UPD) make script, makeall.sh, has been updated to allow the UPD examples to be built as 32-bit (default) or 64-bit binaries.

The commands to build the UPD modules as 32-bit binaries are:

```
./makeall clean
./makeall.sh 32bit
```

The commands to build the UPD modules as 64-bit binaries are:

```
./makeall clean
./makeall.sh 64bit
```

3.19   system.txt – Default NUM_MSGS

The example system.txt file now uses a value for NUM_MSGS of 5000 (instead of 10000 previously). This is to avoid unnecessarily consuming large amounts of memory in small, low throughput systems.

3.20   Device driver version written to kernel log

To facilitate diagnostics, the version number of the device driver is now written to the kernel log. This version number is the same as the release of the Development Package.

3.21   SS7MD – Driver use under Solaris 10 Update 9

This release includes a work-around within the SS7MD device driver for a known issue in the Solaris 10 Update 9 Operating System which previously prevented the driver loading correctly.

3.22   SS7MD – Driver use in multi-slot servers

This release corrects an issue that could potentially cause a kernel panic or crash when the driver for the SS7MD board is loaded. The issue occurred in servers containing multiple PCIe cards and in particular when moving cards from one slot into a different slot.

Dialogic
17-Mar-11

Release 5.0.6

1 Overview

This release is functionally identical to Release 5.0.4 but it corrects an issue which prevented correct operation of licenses when using the Solaris SPARC binaries.

1.1 Applicability

This release is suitable for all users.

Users of the Solaris SPARC operating system must use this release as opposed to Release 5.0.4.

Users of the Solaris x86 operating system will see no difference in operation from Release 5.0.4 and may continue to use Release 5.0.4 if already deployed.

2 Changes

2.1 Software Licensing under Solaris SPARC

This release corrects an issue which prevented existing host-based software licenses working correctly under Solaris SPARC. Instead host binaries would behave as if there was an invalid license present.

Dialogic
27-Aug-10

Release 5.0.4

1 Overview

This release is a major release containing new functionality and changes to the overall structure of the Development Package. The release adds support for Solaris x86 operating system in addition to the existing support for Solaris SPARC operating system. It also adds SNMP capability for boards and host protocol software and includes several protocol updates and corrections as detailed below.

This release consolidates all the functionality of the previous Development Package along with all Host Protocols binaries, all board code files and the , User Part Development Package (UPD) into a single distribution. All host-based software binaries take the same binary release number using a new three-part release designation – "Release x.y.z".

The structure of the Development Package has been enhanced by moving all device drivers into a separate installation 'package' which can be optionally installed as required.

This is the first release since V4.11 and incorporates the first release of all host based protocols subsequent to the following (Changes since these releases are documented in these release notes):

MTP3 V6.03
ISUP V6.03
TUP V3.00
SCCP V4.03
TCAP V5.02
MAP V5.02
IS41 V5.00
INAP V4.01
M3UA V6.02
M2PA V3.01
SUA V1.06
MST V3.02
INAP API Library V1.1.0

Release notes for the board code files are contained in separate documents and can be downloaded from the web-site. The following code files are included as part of this Development Package:

ss7.dc3 V1.16
ss7.dc4 V5.09
ss7.dc6 / ima.dc6 / ss7mcd.dc6 V1.10

The following User Documentation updates are applicable to this release of the Development Package:

Dialogic® DSI SS7 Protocol Stack – MAP Programmer's Manual, Issue 14,
Dialogic® DSI SS7 Protocol Stack – TCAP Programmer's Manual, Issue 11,
Dialogic® DSI Protocol Stacks SNMP User Manual, Issue 2.

This release is backwards-compatible with previous release however users should note the following:

1. The root installation directory is now /opt/DSI (previously it was /opt/DKseptel)

2. Certain host binaries no longer contain '_sol' within the filename so filenames will need to be modified in 'system.txt' (See section 2.1 below for further details).

1.1   Applicability

This release is suitable for all users. In particular users of the Dialogic® DSI SS7MD Board are advised to upgrade to this release as it includes enhancements to the driver and code file to prevent occasional board shutdown issues.

1.2   Resolved Customer Issues

Updates to resolve the following customer issues are included in this release: IPY00091590.

2   New Functionality

2.1   Enhanced Development Package Structure

The Development Package for Solaris has been enhanced to include, in a single distribution, all the software required by board and host software users of the Dialogic® DSI SS7 Boards and Dialogic® DSI Protocol Stacks.

The Development Package now includes all host protocol binaries, board code files and the example software from the User Part Development Package. This allows users to update multiple components within a single installation cycle.

As part of this change, all host based software now uses a three part release number in the form "Release x.y.z" to uniquely identify the software version. The new format replaces the Vx.yy format used previously and aligns with the format used on other Dialogic® Products. Furthermore all host based binaries that form part of this distribution have the same release number.

For example:

```
DSI gctload Release 5.0.4 (Build 1024)
Part of the Dialogic(R) DSI Development Package for Solaris(SPARC)
Copyright (C) Dialogic Corporation 1994-2010. All Rights  Reserved.
```

In order to provide common binary names across different operating systems and therefore simplify use and documentation, the names of a number of host binaries have changed so that they no longer include the '_sol' designation. Users will need to modify the system.txt file accordingly in order to use the new filenames.

tick_sol becomes tick
tim_sol becomes tim
mtp3_sol becomes mtp3
isup_sol becomes isup
tup_sol becomes tup
sccp_sol becomes sccp
tcap_sol becomes tcap
map_sol becomes map
is41_sol becomes is41
inap_sol becomes inap
mst_sol becomes mst

The resulting consolidated Development Packages for Solaris are distributed within two compressed 'tar' archive files:

dpksparc.tar.gz   - Solaris Packages for Solaris-SPARC
dpkx86.tar.gz   - Solaris Packages for Solaris-x86

Each distribution contains two Solaris packages:

dsidpk   - DSI Development Package
dsidrv   - DSI Network Interface Board Driver Package

All users need to install the 'dsidpk' package whilst only users of signaling boards will need to install the 'dsidrv' package. Both packages contain support for 32 bit and 64 bit systems and the installation process selects the appropriate package for the target system.

The Solaris package installation steps are:

1. Select the correct Solaris distribution and extract the Solaris package files:

    SPARC:
    ```
    gzip -d dpksparc.tar.gz
    tar -xf dpksparc.tar
    ```

    X86:
    ```
    gzip -d dpkx86.tar.gz
    tar -xf dpkx86.tar
    ```

2. Whilst logged-on as 'root', install the extracted Solaris packages:

    ```
    pkgadd -d dsidrv
    pkgadd -d dsidpk
    ```

Note: 'dsidrv' is only necessary for users requiring board-level drivers.

2.2   Support for Solaris-x86

This release adds full support to the Development Package for Solaris x86 based operating system. This includes software environment, board drivers and host binaries allowing users to the choice between SPARC based systems and x86 based systems.

Note: For all licensed binaries the decision between SPARC and x86 must be taken at the time of activating the license. Licenses are not interchangeable between the two operating systems.

Users of x86 based Solaris systems should use the **dpkx86.tar.gz** distribution whilst SPARC users should use the **dpksparc.tar.gz** distribution.

2.3   SNMP Support

This release adds SNMP support for boards and protocols to the Development Package.

The Dialogic® Distributed Structured Management Information (DSMI) Simple Network Management Protocol (SNMP) Agent provides SNMP monitoring functionality for the Dialogic® DSI SS7 Development Package.

Dialogic® DSMI SNMP software supports SNMP V1, V2 and V3 reporting the state and events for Dialogic® DSI SS7 Boards and Dialogic® DSI Protocol Stacks through use of SNMP traps as well as queries from a SNMP manager.

The Dialogic® DSMI MIBs are distributed within /opt/DSI as a compressed ZIP file: dsi-mibs.zip.

For details of the DSMI SNMP MIBs supported, events, SNMP traps and configuration refer to the Dialogic® DSI Protocol Stacks SNMP User Manual, Issue 2.

2.4   User Part Development Package

The example software and configuration files within the User Part Development (UPD) package have been updated and changed to simplify use. This release features new and updated configurations which all use the DSI s7_mgt configuration utility rather than message based scripts, making the configuration process more complete and easier to follow.

The UPD provides users with an easy way to try out various DSI protocols and also provide developers with example source code on which they can base their own applications.

In addition the User Part Development Package Makefiles have been updated to simplify the build process should users wish to rebuild the samples. A number of issues in the sample source code have been resolved and all the binaries rebuilt.

2.4.1   New Functionality

M3UA configurations have been added for MTU, MTR and CTU – this allows users to use M3UA directly without having to first convert the previous M2PA offering.

The INTU code has been updated to recognise CAPv4 and CAPv4 for IMS Application Contexts.

MTU/MTR now support additional MAP services including USSD services, MT Forward SMS and SRI for SMS

2.4.2   Usage Instructions

Prebuilt binaries for all examples are supplied within the Development Package. These can easily be rebuilt by the user using the makeall file as follows (with or without the 'clean' parameter)

```
makeall.sh clean
makeall.sh
```

2.4.3   Running UPD samples

From within the UPD RUN directory select the directory for the concerned sample, and then the configuration type (M3UA, MTP or M2PA) and CONFIG, CONFIG_1 or CONFIG_2.

For M3UA and M2PA configurations – in the config.txt file change the IP addresses to match the local and remote systems.

For MTP configurations – ensure the board type, codefile and board interface task are correct for the host system within the config.txt and system.txt files.

From within the same directory run gctload and then the sample itself - unless it is started ('forked') within system.txt.

For detailed information on running each sample, refer to the relevant UPD sample user guide.

Note: The development package contains the latest version of the configuration files which may differ from those given in the user guides.

2.5   MAP - New Services / Extended Service Type parameter

The following services have been added to the MAP module:

- Reset Service
- Set Reporting State service
- Status Report Service
- Remote User Free Service
- Register CC Entry
- Erase CC Entry
- Interrogate-SS Service added for MAP Version 1
- GetPassword for MAP Version 1
- RegisterPassword for MAP Version 1

The services introduced in this release require the use of a new method of specifying the Primitive Service Type. This change has been introduced to permit additional Service Type definitions for MAP services to be allocated beyond the existing single octet range. The new method allows Primitive Service types that use up to two octets.

For further information refer to Dialogic® DSI SS7 Protocol Stack MAP Programmer's Manual U14SSS, Issue 14.

2.6   INAP API - CAMEL V4 for IMS Protocol Support

The INAP API module now supports the CAMEL Version 4 for IMS Protocol. The CAMEL V4 for IMS Specification supported by the module is 3GPP TS 29.278 7.0.0 (2005-12).

2.7   Reading number of pending messages

The ability to read back the number of outstanding messages queued on a message queue has been added. This can be achieved using a command line option for gctload or programmatically using a new function GCT_pending_msgs() contained within gctlib.

To use gctload the user should run a second instance of gctload using the –t3 option as follows, this will list the number of queued messages on each local message queue:

```
gctload – t3
LOCAL  0x10:  5 messages queued.
LOCAL  0x20:  0 messages queued.
```

Alternatively the function GCT_pending_msgs can be used to programmatically return the number of messages currently queued on a single named local message queue. The function prototype is:

```
int GCT_pending_msgs(unsigned int module_id)
```

The function returns a positive integer indicating the number of messages currently queued on message queue, module_id or a negative integer on error.

3   Other Changes

3.1   Trial Mode

The period for which licensed binaries can be run without a license in 'trial mode' is set to one hour after which the binary will terminate.

3.2   SS7MD driver (IPY00091590)

This release corrects an issue within the SS7MD device driver which could result in the board spontaneously shutting down, potentially causing an operating system kernel 'panic', typically soon after startup. Users should also ensure that the latest *.dc6 code file is used.

3.3   GCTLOAD - Host Verification

To prevent run-time errors due to incorrectly configured systems GCTLOAD has been updated to always verify that the host operating system has sufficient system resources to support the DSI environment specified in system.txt. GCTLOAD will terminate if the system resource verification fails.

Previously GCTLOAD only verified the host operating system's system resources if the 'VERIFY' command was present in system.txt.

3.4   MTP3 – Link Statistics

Three previously unsupported measurements have been added to the link statistics report using existing fields in the MTP_MSG_R_LK_STATS message: Remote inhibit duration, link failed duration, and RPO duration. In addition the calculation of local inhibit duration has been corrected.

3.5   MTP3 - ANSI Traffic Restart Waiting Timer T28

The default value of the ANSI Traffic Restart Waiting timer has been changed from 1 to 10 seconds to align with the ANSI specification.

3.6   MTP3 - Pseudo Default Route configuration

When a Default Route with a pseudo point code is configured, the Route Set Test procedure is automatically disabled (rather than requiring the user to explicitly disable it in the configuration message).

3.7   TCAP - Configurable trace module id

A Trace Module ID can now be defined in the TCAP Module Configuration message (TCP_MSG_CONFIG). The new 'trace_id' field uses a previously reserved field in the message. If trace_id is defined as non-zero, the all trace messages are sent to that module id. If trace_id is set to zero, trace messages are sent to the Management Module ID (mngt_id) as for previous releases.

For further information refer to Dialogic® DSI SS7 Protocol Stack TCAP Programmer's Manual U06SSS, Issue 11.

3.8   MAP - Requested Info and Subscriber Info

The information that can be requested by the Requested Info parameter has been enhanced. This affects Subscriber Info table data returned in service responses. The changes affect 3 existing services: AnyTimeInterrogation (ATI); ProvideSubscriberInfo (PSI) and SendRoutingInfo for MAPv3.

For previous releases, when the MAPPN_req_info parameter was coded with more than one bit set, only a single bit was ever sent in the output message. This affected the ATI and PSI services. For this release, the parameter is correctly encoded into the output message when more than one bit is sent.

For further information refer to Dialogic® DSI SS7 Protocol Stack MAP Programmer's Manual U14SSS, Issue 14.

3.9   MAP - Update Location Service parameters

The Update Location service for MAP v3 has been updated to add additional parameters to the request message. The added parameters are already defined in the MAP module for other services.

For further information refer to Dialogic® DSI SS7 Protocol Stack MAP Programmer's Manual U14SSS, Issue 14.

3.10   MAP - New parameters for ATI service

Previous releases allowed some parameters to be sent but they would be discarded if received. The parameters affected were MAPPN_selectedlsa_id, MAPPN_msc_num, MAPPN_geodetic_info, MAPPN_currenr_loc_retrieved and MAPPN_sai_present in the ATI, PSI and SRI v3 services. These parameters can now be received correctly for the services

For further information refer to Dialogic® DSI SS7 Protocol Stack MAP Programmer's Manual U14SSS, Issue 14.

3.11   MAP - Length of MAPPN_cell_id parameter

Previous releases allowed the MAPPN_cell_id parameter to have lengths between 5 and 7 octets. This is invalid according to TS29.002, the CellGlobalOrServiceAreaIdFixedLength variable should have a fixed length of 7 octets. This release requires the parameter to have a length of 7 octets.

3.12   MAP - MAPPN_requestedequipinfo min size

The minimum size of this parameter has been altered from 2 to 1. This is in accordance with MAP spec 29.002. The maximum size remains as 8, for backwards compatibility.

3.13   MAP - SendAuthInfo without parameters

For previous releases, Send-Authentication-Info v3 messages with no parameters where rejected by MAP when received from TCAP. This release corrects this behaviour; Send-Authentication-Info messages with no parameters are now accepted.

Note: The IMSI and NumberOfRequestedVectors parameters for this service are normally Mandatory according to the specifications, however if the message is repeated the specifications state that the parameters can be excluded, thus a Send-Authentication-Info message with no parameters is valid.

3.14   MAP - Formatting of TCAP response messages

For previous releases the TCAP formatting of the response messages for some services could be incorrect. This fault affected response messages where only an Invoke ID parameter was defined (no other parameters). This caused an invalidly formatted response message to be sent to TCAP. The following services were affected:

•   AuthenticationFailureReport

•   SendEndSignalling

•   PrepareHandover

•   SendAuthInfo (for MAP V3)

The fault has been corrected for this release and the response messages are correctly formatted when sent to TCAP.

3.15 MAP - QoS Transparency

The MAP module can be configured to return any QoS information received from TCAP to the MAP-User. This is controlled via a new configuration option flag, MAPF_QOS_TRANSPARENT.

The option is applicable to the MAP_MSG_CONFIG and MAP_MSG_NC_CONFIG configuration messages, e.g. this facility is selectable for different MAP-Users via the Module and NC configurations.

When the option is enable, whenever QoS data is received from TCAP it will be returned to the MAP_User in the next Dialogue Indication message.

For further information refer to Dialogic® DSI SS7 Protocol Stack MAP Programmer's Manual U14SSS, Issue 14.

3.16 MAP - Message generation after MAP-NOTICE-IND and/or TC-U-REJECT

For previous releases, MAP was not correctly handling some situations that required MAP-NOTICE-IND messages to be sent to the user and/or U-REJECT to be sent to TCAP and the dialog was left in an inappropriate state. MAP should either close the dialog and send a MAP-CLOSE-IND message or move to a next state and send the user a MAP-DELIMITER-IND message. This release ensures that it is correctly handled.

In order to prevent unexpected behaviour in some MAP applications this change can be disabled using a MAP configuration option.

It is recommended that this option should only be set when the messages now being generated cause problems for the MAP application. Otherwise the flag should be set to 0.

For further information refer to Dialogic® DSI SS7 Protocol Stack MAP Programmer's Manual U14SSS, Issue 14.

3.17 INAP API - Handling of long parameters

A fault in the handling of the INAPPN_CODE_SHIFT parameter prevented the support for parameters longer than 255 octets from functioning correctly. This has been resolved in this release.

3.18 INAP API - IN_set_dialogue_param() length handling

A fault in this procedure can result in incorrect encoding of the parameter length in certain situations. This fault has now been cleared.

3.19 INAP API - INDP_nc and INDP_report_cause

The previous of the INAP API library did not support the use of the Network Context (NC) and Report Cause dialogue parameters from the INAP binary module. This release adds the parameters:

INDP_report_cause   (30)   (0x1e)

INDP_nc   (31)   (0x1f)

The parameters are used with the IN_set_dialogue_param() and IN_get_dialogue_param() functions.

3.20 MST - Virtual packets for an invalid port

In the previous release an IP Message (MST_MSG_IP_MSG) received for an invalid port (out of range or not configured) was not handled correctly. In this release the IP message will be discarded correctly.

3.21 MST - Port device names

The Configure MST Port message (MST_MSG_CFG_PORT) in the previous release would reject an empty device name for ports of port type "virtual". This is now accepted. Empty device names for ports of port type "Ethernet" will still be rejected.

3.22 s7_mgt - LIU_CONFIG <options>

The LIU_CONFIG command now supports an <options> parameter which is used to further select advanced clocking options for certain board types (eg. SS7MD). The full syntax of the command is:

LIU_CONFIG <board_id> <liu_id> <liu_type> <line_code> <frame_format> <crc_mode> [<build_out> <options>]

Use of the <options> parameter is detailed in the per-board user documentation.

Note: When not required the <build_out> parameter should be set to zero.

3.23 SCTPN - Preferred Path Selection

A new configuration option has been added to SCTPN to cause automatic selection of the preferred path for routing whenever that path is available. This means that in the event of recovery of the preferred path, traffic will automatically revert back to the preferred path rather than continue using the alternative path. This first host IP address configured for the association is designated as the preferred path.

The functionality is activated by setting bit 5 in the options field of the SCTP configuration message (SCTP_MSG_CONFIG). This can be achieved in config.txt using the following command:

CNOPS:MODULE=SCTP,OPTIONS=0x0020;

3.24 SSDM – CRC4 Status

When operating in CRC4 mode the previous release incorrectly indicated "IN SYNC" prior to establishing full CRC4 multi-frame synchronization. This has been corrected so that the "IN SYNC" indication now implies that full CRC4 synchronization has been established.

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