Dialogic® DSI Development Package for Solaris
Release Notes

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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,

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-DELMITER-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 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 (SCP_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:

SNLSI: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:

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

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:


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: numberOfRequestedAdditionalVectors 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 Diameter Stack – DMR Programmer's Manual, Issue 3,
Dialogic® DSI Diameter Stack – Diameter Functional API Manual, Issue 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 it 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 protocol 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 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:


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.

<table>
<thead>
<tr>
<th>LAS ID value</th>
<th>Network Context Value</th>
<th>Default M3UA Module ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NC0</td>
<td>0xd2</td>
</tr>
<tr>
<td>2</td>
<td>NC1</td>
<td>0xd6</td>
</tr>
<tr>
<td>3</td>
<td>NC2</td>
<td>0xd7</td>
</tr>
<tr>
<td>4</td>
<td>NC3</td>
<td>0xd8</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>LOCAL</th>
<th>0xd2</th>
<th>M3UA module</th>
</tr>
</thead>
<tbody>
<tr>
<td>REDIRECT</td>
<td>0xc2</td>
<td>Management task</td>
</tr>
<tr>
<td>REDIRECT</td>
<td>0xd6</td>
<td>M3UA LAS2/NC1</td>
</tr>
<tr>
<td>REDIRECT</td>
<td>0xd7</td>
<td>M3UA LAS3/NC2</td>
</tr>
<tr>
<td>REDIRECT</td>
<td>0xd8</td>
<td>M3UA LAS4/NC3</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Mnemonic</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTPTFR14</td>
<td>0</td>
<td>MTP label contains 14-bit point codes</td>
</tr>
<tr>
<td>MTPTFR24</td>
<td>1</td>
<td>MTP label contains 24-bit point codes</td>
</tr>
<tr>
<td>MTPTFR16</td>
<td>2</td>
<td>MTP label contains 16-bit point codes</td>
</tr>
</tbody>
</table>

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_CNFI_INT_NA (0x72c4) has been renamed M3U_MSG_CNFI_NC to reflect that it is used to configure Network Context parameters. 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,

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 MAPN_dest_ref and MAPN_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 MAPN_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 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:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>num_uc</td>
<td>2048</td>
</tr>
<tr>
<td>uc_onset</td>
<td>1536</td>
</tr>
<tr>
<td>uc_abmt</td>
<td>1024</td>
</tr>
<tr>
<td>base_id</td>
<td>1024</td>
</tr>
<tr>
<td>top_id</td>
<td>2047</td>
</tr>
<tr>
<td>min_id</td>
<td>0</td>
</tr>
<tr>
<td>max_id</td>
<td>2047</td>
</tr>
</tbody>
</table>

### 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:

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

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-Discuss PDU with the reason 'invalidDestinationReference' or 'invalidOriginationReference', the module will send a MAP-OPEN-CNQ 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_DL_G_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 (?).

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 (i.e. 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,

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 (0xe4c).

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 (0xe50).

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 be 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 MAPN_user_err (21) and MAPN_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:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Affected AIN Services</th>
<th>Previous TAG</th>
<th>Corrected Tag</th>
</tr>
</thead>
<tbody>
<tr>
<td>AINPN_GenericName (551)</td>
<td>AnalyzeRoute</td>
<td>0xa1</td>
<td>0x9f, 0x21</td>
</tr>
<tr>
<td>AINPN_TriggerInformation (24)</td>
<td>InfoAnalyzed, InfoCollected</td>
<td>0x9f, 0x21</td>
<td>0x9f, 0x81, 0x21</td>
</tr>
<tr>
<td>AINPN_AMABillingFeature (65)</td>
<td>AnalyzeRoute, Disconnect, SendToResource</td>
<td>0x9f, 0x3a</td>
<td>0x9f, 0x58</td>
</tr>
</tbody>
</table>

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.
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:


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)
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 gctlload 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.

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.


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.


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.

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_curren_loc_retrieved and MAPPN_sai_present in the ATI, PSI and SRI v3 services. These parameters can now be received correctly for the services


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.


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-DELEMITER-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.


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.

Dialogic
11-Aug-10
Revised 27-Aug-10
Release Notes for V4.11

1 Overview

The release includes enhancements to the s7_mgt management utility as detailed below.

The release is fully backwards compatible with the previous release.

2 New Functionality

2.1 s7_mgt – Activating Heartbeats for M3UA

s7_mgt has been updated to support M3UA heartbeats. The M3UAHBT option is configured on a per association basis and is an additional parameter to the SNSLI command. On detection of heartbeat failure the association will be aborted and restarted in the usual manner.

Syntax:

```
SNSLI:SNLINK=,IPADDR=,[IPADDR2=,][IPADDR3=,][IPADDR4=,]
[HIPADDR=,][HIPADDR1=,][HIPADDR2=,][HIPADDR3=,][HIPADDR4=,]
[SG=,][SS7MD=,][HPORT=,][PPORT=,][SNEND=,][SNTYPE=,]
[M2PA=,][M2PA_VER=,][NA=,][M3UAHBT=;]
```

Example:

```
SNSLI:SNLINK=1,IPADDR=172.28.148.40,SNTYPE=M3UA,M3UAHBT=Y;
```

As default, M3UA heartbeats will be sent every 30 seconds. This may be changed by using the CNTOS command – see below.

2.2 s7_mgt – Configuring M3UA timers

M3UA timers may now be configured with the CNTOS command, with the TTYPE parameter now accepting M3UA in addition to SCTP and M2PA.

The CNTOS commands’ TO parameter now accepts the four M3UA timers: Tack, Tr (recovery), Tdaud and Tbeat (heartbeats).

See the M3U_CNF_TIMERS message in the M3UA Programmer’s Manual for full description of these timers, including range and default values.

Syntax:

```
CNTOS:TTYPE= SCTP|M2PA|M3UA, TO=TACK|TR|TDAUD|TBEAT, 
{TSEC=|TMSEC=};
```

Example:

```
CNTOS:TTYPE=M3UA,TO=Tbeat,TSEC=10;
```
3 Other Changes

3.1 s7_mgt – GTT Configuration
Previously, when specifying a <gtai_pattern> which only contained a "+" character, s7_mgt could produce a translation rule which would be rejected by SCCP or SUA. This has now been corrected.

3.2 Management Module ID
Previously, when specifying an alternative management module ID with the MGMT_MOD_ID command it did not work for M3UA or M2PA. This issue has now been resolved.

3.3 s7_mgt CNTOS command
A change has been made to allow larger timer intervals to be entered, thereby allowing the maximum values for M3UA timers to be entered.

Dialogic
05-Mar-10
Release Notes for V4.10

1 Overview

This is the first release of the Solaris Development Pack since V4.03. This release contains enhancements to the inter-process communication mechanism which significantly increase system throughput in both single and multi-core processor deployments.

It includes enhancements to s7_mgt associated with configuration of the latest M3UA release and a TXA binary to allow Dialogic® DSI User Part software to be used in conjunction with Dialogic® TX Series SS7 Boards.

The release introduces three new command line management utilities to simplify control of, and status gathering from, protocol modules and activation of trace masks.

This release includes further enhancements as detailed below including the ability for s7_log to create multiple rolling log files when configured to create PCAP format logs.

The release is fully backwards compatible with the previous release.

1.1 Applicability

All users should upgrade to this version of the Development Package to gain significant improvements in performance.

1.2 Resolved Customer Issues

Updates to resolve the following customer issues are included in this release: IPY00081007, IPY00081077, IPY00081819 and IPY00081954.

2 New Functionality

2.1 Performance enhancements for Multi-Core Processors

The underlying inter-process communication mechanism has been enhanced to have less dependency on global system-wide resources in order to better exploit the capabilities of multi-core processor architectures.

As a result, significant performance gains in terms of system throughput are achieved. Systems based on multi-core processors are able to fully utilise the additional cores whilst even single core processors achieve increased throughput.

The Multi-Core Optimizations require the use of gctload and gctlib from this Development Package. They are fully compatible with all current versions of Dialogic® DSI Protocol Stacks for Solaris achieving performance gains without the need to upgrade protocol versions.
**NOTE:** In order for users to benefit from the multi-core optimizations provided it is necessary that the libc version supported on the target system is greater than or equal to SUNW_1.22.1.

The Development Package contains two versions of the gctlib shared object file, one (libgctlib.so.x.y.z) which includes the Multi-Core Optimizations and one (libgctlib_nomco.so.x.y.z) for use on installations that do not have the necessary libc version in place. The installation process determines which library to install based on the version of libc currently installed. If libc version is greater or equal to SUNW_1.22.1 then the libgctlib.so.x.y.z version is installed otherwise the libgctlib_nomco.so.x.y.z version is installed.

**NOTE:** If the Solaris Operating System on the target system is revised to have a different version of libc then it is recommended that the DSI Development Package is removed and re-installed to ensure that the optimal version of libgctlib.so is installed.

### 2.2 **s7_mgt - M3UA Configuration - Default Routes**

The SNRTI command which is used to configure SIGTRAN routes now has a new optional OPTIONS parameter to allow existing and future per-route options to be selected within config.txt at run-time.

The content of the OPTIONS parameter is used to populate the <options> field in the M3UA Route Configuration message M3U_MSG_CNF_ROUTE. Initially the main use of this parameter is to designate the route as a ‘Default Route’.

<table>
<thead>
<tr>
<th>Bit</th>
<th>Mnemonic</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>M3UOP_ROUTE_ASSUME_AVAIL</td>
<td>Assume route always available</td>
</tr>
<tr>
<td>1</td>
<td>M3UOP_ROUTE_LOADSHARE</td>
<td>Loadshare across all servers in the route</td>
</tr>
<tr>
<td>2</td>
<td>M3UOP_ROUTE_DEFAULT</td>
<td>Default Route</td>
</tr>
</tbody>
</table>

If the OPTIONS parameter is omitted then s7_mgt will default to using the value 0x0002 to provide full backwards compatibility with the previous release. Example usage of the new parameter is as follows:

```
SNRTI:SNRT=1,DPC=200,OPTIONS=0x0004;
```

### 2.3 **Management Utilities – dsictrl, dsistat and dsitrace**

This release includes three new management utilities (dsictrl, dsistat & dsitrace) to assist the user when performing management functions from the command line.

- **dsictrl** allows control of MTP links, Sigtran links, LIUs and ISUP circuit groups using a command line interface.
- **dsistat** allows status and measurements to be easily extracted from individual protocol modules using a command line interface.
- **dsitrace** allows trace masks for individual protocol modules to be conveniently set using a command line interface.
For a full syntax listing run the tool with the --h option.

2.4 **TXA binary to run DSI User Parts above TX Series Boards**

This release includes a binary – TXA – which allows host-based Dialogic® DSI User Part protocols to be run above the Dialogic® TX Series SS7 Boards. This is of particular use for existing users of deployed TX Series boards that may wish to run MAP, INAP or IS41 protocols in conjunction with host-based TCAP and SCCP above MTP3 running on the TX Series board.

Refer to User Guide: Running DSI User Parts Over Dialogic® TX Series SS7 for full information.

2.5 **s7_log - Rolling PCAP Log files**

The ability for s7_log to generate capacity limited rolling log files has been extended to include PCAP format log files.

When generation of PCAP log files is activated using the --p option, whenever either of the two options --s or --n are activated the PCAP log file will automatically be in the form of multiple, capacity constrained files with a numeric suffix.

2.6 **s7_mgt - SIGTRAN Link Auto-Activation**

s7_mgt has been updated to allow automatic activation of Sigtran associations to be disabled by the user if not required. The new optional AUTOACT parameter of the CNSYS command should be set to 'N' to disable auto-activation of Sigtran associations. For example:

```
CNSYS:IPADDR=192.168.1.20,AUTOACT=N;
```

3 **Other Changes**

3.1 **s7_log – Preservation of previous log file**

s7_log has been updated to create a backup of the existing log file, if one exists, with the filename <logfile_name>.old. For example, if s7_log is configured to capture its output to the log file, 'log.txt' and it detects an existing copy of 'log.txt' then 'log.txt' will be renamed 'log.txt.old' and a new 'log.txt' file will be created.

*NOTE:* This functionality is applicable only when s7_log is configured to use a single log file and does not apply when either the --s or --n options are used to create multiple rolling log files.

3.2 **s7_mgt – GTT Configuration (IPY00081954)**

In previous versions, when configuring an ITU Global Title Translation with the Global Title Indicator set to "0100", on occasions bit 8 of Octet 3 of the Global Title was incorrectly set to '1'. This bit will now always be set to '0'.
3.3 **GCTLIB - Thread Initialisation (IPY00081819)**

In previous releases an error could occur if multiple threads of an application tried to initialise the GCT environment at the same time. This has been corrected.

3.4 **SCTP Congestion Control**

The congestion control mechanism in previous releases of the SCTP binary (but not the SCTPN binary) limited maximum throughput to 1,800 messages/s per association. This restriction no longer exists.

3.5 **SCTPN - Association Reconfiguration (IPY00081007)**

It is possible to dynamically reconfigure SCTP association to add and remove addresses. The association being modified should first be deactivated and then reconfigured before being activated again. A potential problem causing excess CPU utilization and association failure as a result of dynamic reconfiguration has been corrected.

3.6 **s7_log – PCAP Corruption (IPY00081077)**

Previous releases of s7_log created corrupt PCAP log files when capturing trace event messages (SS7_MSG_RX_IND, API_MSG_TX_REQ and API_MSG_RX_IND) from a module. This resulted in WireShark displaying corrupt packages and has now been corrected.

3.7 **s7_mgt – Global Title Address Limitations**

Previous releases of s7_mgt limited global title addresses to 8 octets or less. This has been corrected.

3.8 **s7_mgt – SCCP and TCAP Trace Module Id**

This release supports setting the trace_id for SCCP and TCAP to the value specified in the TRACE_MOD_ID command (subject to using a version of SCCP and TCAP that supports the configurable trace_id). In previous releases this command was not supported for SCCP or TCAP protocols so the default value of 0xef was used.

Dialogic
03-Feb-10
Release Notes for V4.03

1 Overview

This release of the Dialogic® SS7 Development Package for Solaris includes updated support for the Dialogic® DSI SS7MD Network Interface Board to allow termination of ATM Q.SAAL links. This release also includes enhancements to the inter-process message passing mechanism to allow 64 bit applications to co-exist with the 32 bit Dialogic® DSI Host Protocol Software.

This is the first release since V4.01 and is backwards compatible with that release although all users will need to adjust the kernel settings as detailed in section 2.1 below to provision additional capacity within internal message queues.

Users should note that this release is no longer compatible with old style statically linked Host Protocol binaries or with the host utilities provided with Development Package V2.02 or earlier.

1.1 Resolved Customer Issues

Updates to resolve the following customer issues are included in this release: IPY00080025, IPY00080200 and IPY00080425.

2 New Functionality

2.1 Adjusting kernel parameters

Due to the change made to support co-existence of 32 and 64 bit binaries in a common environment it is necessary to increase the values of certain kernel parameters. The required changes are detailed in the Dialogic® Distributed Signaling Interface Components - Software Environment Programmer's Manual, U10SSS Issue 7.

2.2 SS7MD ATM Q.SAAL Link Termination

This release adds the ability to use and configure SS7 links to operate in ATM mode over a T1/E1 interface. It includes updated versions of the s7_mgt configuration utility and of the Device Driver for the SS7MD board.

Operation and configuration of terminated ATM links are detailed in the Dialogic® DSI SS7MD Network Interface Boards Programmer’s Manual, Issue 3.

In order to use this functionality it is necessary to use ss7.dc6 or ima.dc6 code files V1.08 or later.
2.3 Support for 64 bit Applications
The Development Package now includes both 32 bit and 64 bit GCTLIB shared object libraries, allowing 64 bit applications to co-exist with 32 bit DSI software. For full details refer to the Dialogic® Distributed Signaling Interface Components - Software Environment Programmer’s Manual, Issue 7.

2.4 s7_mgt – Activating SLS Rotation for M3UA
s7_mgt is capable of activating SLS rotation in accordance with T1.111.5 within M3UA. To achieve this the ROTATION attribute must be set for the appropriate network context as shown below:

CNNCI:SS7MD=ANSI,ROTATION=Y;

3 Other Changes

3.1 MBM – End Resources
Previous releases of MBM did not generate a confirmation message for the MBM_END_RSP and MBM_MSG_END_AS messages. This fault has been corrected.

3.2 s7_mgt – M3UA Service Indicators
Previous releases of s7_mgt use a fixed configuration for M3UA Service Indicators such that ISUP (SI=5) and SCCP (SI=3) were always configured. This could cause problems if all the module message queues were not processed.

s7_mgt now configures an Adjacent Application Server or Signaling Gateway in M3UA (M3U_MSG_CNF_SERVER), using only the Service Indicators and Module IDs for the protocols present in the config.txt configuration file.

If the M3UA-user protocols are to be configured later using messages then the MTP_USER_PART command should be used to configure the service indicator and module ID of that protocol.

3.3 s7_mgt – Monitor Links (IPY00080425)
Previous release of s7_mgt would not correctly configure monitoring links if the MONITOR_LINK command occurred before the MTP_LINK command in config.txt. This restriction has been removed.

3.4 s7_mgt – 32 bit Network Appearances
Previous releases of s7_mgt would reject a Network Appearance value where the most significant bit (bit 31) was set. This has been corrected allowing any 32bit value to be used.

3.5 s7_mgt – More than 16 TCAP instances
Previous releases of s7_mgt always configured TCAP to use 4 bits in the transaction_id to identify the TCAP instance. This prevented use of more than 16 TCAP instances in a single system.
This release adds a new optional parameter to the TCAP_CONFIG command which identifies the maximum instance value to be used. If <max_instance> is 16 or greater TCAP is configured to use 8 bits for instance information otherwise it is configures to use 4 bits.

The updated TCAP_CONFIG command is:

```
TCAP_CONFIG <base_ogdlg_id> <nog_dialogues> <base_icdlg_id> <nic_dialogues> <options> <dlg_hunt> [ [<addr_format>] <partner_id> <tcap_inst> [<max_instance>] ]
```

3.6 s7_mgt – DTC Destination Module Id (IPY00080200)

Previously s7_mgt configured DTC to route messages directly to the SCCP module Id rather via the DTS module Id. s7_mgt will now correctly configure DTC to route messages via DTS.

3.7 s7_play – Response Messages (IPY00080025)

The previous release of s7_play did not release response messages requested by the 'Wait for response' playback command. This has been corrected.

Dialogic
16-Jul-09
Release Notes for V4.01

1 Overview
This release of the Dialogic® SS7 Development Package for Solaris adds support for the Dialogic® DSI SS7MD Network Interface Board. This board is a low profile PCI Express form factor with 4 T1/E1/J1 interfaces and support for up to 124 SS7 low speed links or four HSL (High Speed Links). It uses the same API as other Dialogic® DSI Network Interface Boards.

The release also adds support for a new config.txt command STREAM_XCON, which simplifies routing between LIU’s on the board products, enhanced SS7HD error code reporting, and provides other corrections as detailed below.

This is the first release since V3.08 and is fully backwards compatible with that release.

2 New Functionality

2.1 Support for Dialogic® DSI SS7MDL4
This release includes support for the DSI SS7MDL4 Network Interface Board. Full details of the operation of the DSI SS7MDL4 Board are provided in the Dialogic® DSI SS7MD Network Interface Boards Programmer’s Manual.

2.2 STREAM_XCON Command
The STREAM_XCON command permits the cross-connection of timeslots between two Line Interface Units (LIU) on each signaling board and (for certain board types) also allows a fixed pattern to be generated on specified timeslots. Full details on this configuration command can be found in the appropriate boards Programmer’s Manual.

2.3 SS7HD board failure diagnostics
The SSDH module has been extended to provide additional diagnostic information upon the detection of a SS7HD board failure. The SSD_MSG_STATE_IND message has been extended by the addition of two fields in the parameter area. Full details are provided in the Dialogic® DSI SS7HD Network Interface Boards Programmer’s Manual, Issue 10.

3 Other Changes

3.1 SCTPN Global Statistics
In earlier releases, SCTPN did not increment the ‘chunks_unorder_tx’ parameter. This problem has now been resolved.

Dialogic
21-Apr-09
Release Notes for V3.08

1 Overview

This release adds support for Local IP address configuration on a per-Association basis for SIGTRAN based systems and also allows M3UA systems to be configured without the need for Routing Contexts. In addition a number of faults have been cleared.

The optional M3UA Routing Context support requires the use of the M3UA Binary for Solaris V5.03 or later.

The release is fully backwards compatible with the previous release.

2 New Functionality

2.1 Optional M3UA Routing Context support

This release includes updated MBM and s7.mgt binaries which support configurations of M3UA systems which don’t use Routing Contexts. This affects the SIGTRAN Local Application Server Initiate (SNAPI) and SIGTRAN Remote Application Server Initiate (SNRAI) commands. In both cases the Routing Context (RC) parameter is now optional. The revised syntaxes are below.

Syntax

SNAPI: AS=, [RC=, ] [OPC=, ] [SS7MD=, ] [TRMD= ];
SNRAI: RAS=, DPC=, [RC=, ] [SS7MD=, ] [NASP= ];

Examples

SNAPI: AS=1, SS7MD=ITU14, TRMD=LS;
SNRAI: RAS=1, DPC=555;

2.2 Local IP address control for SCTP Associations

The SCTP and SCTPN modules have been updated to support the configuration of IP addresses on a per-association basis. This allows associations to use some, all or none of the available local IP addresses. The local host IP addresses to be used for the association can be configured using an updated SNSLI command in the config.txt file. Up to four addresses can be specified per association using the parameters HIPPADDR, HIPPADDR2, HIPPADDR3 and HIPPADDR4.

Syntax

SNSLI: SNLINK=, IPADDR=, SG=, [HIPADDR=, ] [HIPADDR2=, ] [HIPADDR3=, ] [HIPADDR4=, ] [SS7MD=, ] [IPADDR2=, ] [IPADDR3=, ] [IPADDR4=, ] [HPORT=, ] [PPORT=, ] [SNEND=, ] [SNTYPE=, ] [M2PA=] [M2PA_VER= ];

Example

SNSLI: SNLINK=2, IPADDR=172.28.148.40, HIPADDR=192.195.185.20, HPORT=2906, PPORT=2906, SNEND=S, SNTYPE=M3UA;
If no HIPPADDRx addresses are specified in this command then the association will default to using the IPADDRx addresses specified in the CNSYS command.

3 Other Changes

3.1 SCTP Association Aborting to Receive Window Handling
In the previous release, when the remote peer is congested, SCTP would attempt to send a data chunk to the remote peer until the configured maximum number of data retransmission was reached, causing the association to be aborted. In the new SCTP version, if the advertised received window is less than the length of the data element to be sent, then the number of data retransmission is unchanged therefore the association remains connected.

3.2 SCTP Reconfiguration Error Code
In the previous release, if an attempt was made to reconfigure an association that is connected, connecting or closing, it would return SCTPE_BAD_PARAM. The new version now returns SCTPE_BAD_ID if the state of the association is connected, connecting or closing.

3.3 SCTP RTO Timer
In the previous release if RTO minimum was set to low values (ie. Sub 100ms) there was a possibility of instability of the association. This has been corrected.

Dialogic
24-Nov-08
Release Notes for V3.07

1 Overview

This release adds support for the config.txt configuration of the Dialogic® SUA SIGTRAN protocol module and for the configuration of SCCP and TCAP in dual chassis deployments. It also increases the maximum message length supported by the Sigtran SCTP module. The release also addresses a number of minor issues as detailed below.

The release is fully backwards compatible with the previous release.

2 New Functionality

2.1 Support for the SUA Module

The command set supported by the s7_mgt module has been extended to support the SUA module. The steps required are described in Dialogic® SS7 Protocols Programmer's Manual for SIGTRAN Host Software, Issue 8.

2.2 Increased message-length support for SCTP

In this release the SCTP module has been enhanced to offer support for longer payload messages that exceed the normal MTP2 limit of 272 octets. SCTP is now capable of sending and receiving payload messages with up to 4200 bytes in the parameter area of the message.

Use of this feature requires that the software environment is appropriately configured so as to have a pool of ‘Long Messages’ using the NUM_LMSGS command in system.txt. For full details relating to the capabilities and usage of Long Messages refer to the release notes for V3.00.

If for any reason (e.g. exhaustion of the Long Message pool) the SCTP module is unable to allocate a message with sufficient capacity to store the received message then a management event indication MGT_MSG_EVENT_IND (0x0008) with status set to SCTP_RX_DISCARD (0xf0) is sent to the SCTP module’s management module.

From this release, the s7_mgt module configures the SCTP module’s management module to be the value specified in the MGMT_MOD_ID command with a default value of 0xef.

Check the release documentation to determine whether the SCTP user module (e.g. M2PA, M3UA or SUA) supports Long Messages.

The per-association statistics message (SCTP_MSG_R_STATS) has been extended by the addition of an rx_discard field to count any discarded incoming messages. The new field ‘rx_discard’ is offset 49, size 4 in the parameter area of the message. The new message length is 53 bytes.
2.3 **config.txt configuration of dual chassis SCCP and TCAP**

The ability to distribute the protocol stack over two separate chassis allows users to realise systems that appear to the network as a single point code whilst achieving fault tolerance in the event of a chassis failing.

See the Application Note: Enabling Dual Chassis Fault Tolerance with Dialogic® Signaling Boards for a description of how such a configuration can be used.

This release adds the ability to configure SCCP and TCAP in such configurations by extending the SCCP_CONFIG and TCAP_CONFIG commands. The full syntax of these commands is described in the SS7HD Programmer's Manual. The modifications to these commands are detailed below:

**SCCP_CONFIG** `<local_spn> <ssf> <options>`

- `<partner_id>` specifies the module_id of the partner SCCP module.
- `<instance>` specifies the instance of SCCP running on this system.

**NOTE:** In order to use the `<partner_id>` and `<instance>` parameters the user must also provide the `<management_options>` parameter.

**TCAP_CONFIG** `<base_ogdlg_id> <nog_dialogues> <base_icdlg_id> <nic_dialogues> <options> <dlg_hunt>`

- `<partner_id>` specifies the module_id of the partner TCAP module.
- `<tcap_inst>` specifies the instance of TCAP running on this system.

2.4 **Improved logging by the s7_log module**

Previously, if an unknown event occurred, s7_log would only report that the event had occurred. Now the error code is also reported. A number of additional MTP events are now logged as text. These are S7T_T1_EXP, S7T_T2_EXP, S7T_T3_EXP and S7P_AERM.

3 **Other Changes**

3.1 **PCAP Support for MTP3 running on-board**

The PCAP logging functionality provided by the s7_log module has been extended to support configurations where the MTP3 module is running on the board.
3.2 Support for mixed M3UA Link Types

In previous releases support for Remote Application Server (RAS) and Signaling Gateway (SG) links was only possible if unique Identifiers were used for the RAS and SG parameters. This has been resolved.

3.3 SCTP corrections within SCTPN

A number of protocol corrections have been implemented within the SCTPN module as follows:

- Validation of remote address information when a connection is received from a client application has been corrected to prevent unconfigured remote hosts from connecting and to prevent two associations using the same host port.
- Receipt of an ABORT primitive is now handled correctly.
- A problem when running on a multi-core / multi-processor system, where SCTP would begin, after about five minutes, to send an invalid sequence of messages if no peer SCTP socket were listening has been corrected.
- A problem related to receipt of a "configure association request" on an active association has been corrected.

3.4 SCTP – INIT_REQ streams requested

In earlier releases of the SCTP module, if an invalid INIT-ACK primitive were received which specifies more streams than were requested in the original INIT-REQ primitive then the invalid value would be passed up to the application. From this release the value in the original INIT-REQ primitive will be passed.

3.5 File permissions for log files

In earlier releases, log files created by the s7_log module could only be read by the user that created the file. In this release any user can read them (subject to appropriate setting of the system umask).

3.6 AMI with Zero Code Suppression

In previous releases configuration of a T1 interface using AMI with Zero Code Suppression (ZCS) line coding did not maintain transparency of the timeslot for SS7 signaling links. ZCS is now disabled for any timeslots containing SS7 signaling links.

3.7 Monitoring 56/48kb/s links on SS7HD Boards

A correction has been made within the s7_mgt module to ensure that monitoring of 56kb/s and 48kb/s links is correctly set up on SS7HD boards.
3.8 **SCTPN reporting unused Remote Addresses**

The interface to SCTPN has been changed to align with the behaviour of the SCTP module. Previously, if the SCTPN module received an Address Statistics message (SCTP_MSG_R_PEER_ADDR_STATS) for an unconfigured address then it would respond with h->status set to SCTP_BAD_ID (0x01). From this release, h->status will be set to 0 and 'Status' in the parameter area of the message will be set to SCTP_ADDRESS_INACTIVE (0x00).

Dialogic
10-Oct-08
Release Notes for V3.06

1 Overview

This release includes updates to GCTLOAD to verify if the host operating system environment has been correctly configured, changes to SSD congestion handling and documentation of Solaris 10 Resource Configuration.

This release is fully backwards compatible with the previous release.

2 New Functionality

2.1 GCTLOAD – Verification

GCTLOAD has been updated to support a new, optional, system.txt command, VERIFY. Inclusion of VERIFY in system.txt will cause GCTLOAD to verify that the host operating system has been correctly configured to create the message queues and messages defined in the system.txt file.

Full details of this command are provided in the Dialogic® Distributed Signaling Interface Components - Software Environment Programmer’s Manual, U10SSS Issue 7.

3 Other Changes

3.1 Support for Solaris 10 Resource Configuration

Solaris 10 has deprecated the use of /etc/system for ‘tuning’ kernel parameters. Sun recommend all ‘tuning’ is performed using a new set of Resource Management tools. Full details are provided in the Dialogic® Distributed Signaling Interface Components - Software Environment Programmer’s Manual, Issue 7.

3.2 SSD Congestion Handling

Previous releases required the SSD module to be configured as the GCT congestion module, using either the GCTLOAD command line option -Ci, or the system.txt command, CONG_MSG. From this release SSD detects congestion without requiring these notifications so it is no longer necessary to set SSD as the congestion module.

Dialogic
31–Mar-08