Signaling Gateway
Release Notes

Part No. 3-1970-0001-01

For Release 1.9.7
Oct 24, 2018

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GENERAL

Signaling Gateway (SG) 1.9.7 has been tested on the following hardware platforms:

<table>
<tr><th>Manufacturer</th><th>Model</th><th>Processor</th><th>OS</th><th>Bus</th><th>Board
PCI-X</th><th>Board
PCIe</th></tr>
<tr><td rowspan="8">Sun</td><td>Netra T2xx series</td><td rowspan="3">UltraSPARC T2</td><td rowspan="4">Solaris 10</td><td>PCI-X
PCIe</td><td rowspan="8">HDC3-PCI</td><td rowspan="8">HDCII-LPe
HDC3-LPe</td></tr>
<tr><td>Fire Vxxx series</td><td>PCI-X</td></tr>
<tr><td>Netra T5xx series</td><td>PCI-X
PCIe</td></tr>
<tr><td>Netra 20</td><td>UltraSPARC III</td><td>PCI</td></tr>
<tr><td>Netra X4150</td><td rowspan="3">Intel Xeon</td><td>Solaris 10
CentOS 5.2
CentOS 6.3</td><td>PCIe</td></tr>
<tr><td>Netra X4250</td><td>PCI-X
PCIe</td></tr>
<tr><td rowspan="2">HP</td><td>Proliant DL380 G7</td><td rowspan="2">PCI-X
PCIe</td></tr>
<tr><td>Proliant ML110 G6</td></tr>
<tr><td colspan="7">In case your server type is not listed above, please contact NewNet CT support.</td></tr>
</table>

REQUIREMENTS:

- Each SG host should be equipped with two Ethernet interfaces for the cluster dual LAN, and two Ethernet interfaces for SCTP access.
- Each pair of redundant Ethernet interfaces should connect to different Ethernet hubs on different subnets to prevent single-point-of-failures.
- Similarly, the SG host where SS7 links are present should be equipped with at least two SS7 interface cards to increase the reliability

Note: *Since all critical internal data, including Heartbeat, synchronization, and SS7/SIGTRAN messages are exchanged between the hosts of a distributed cluster in Distributed7 via dedicated dual Ethernet links, it is imperative that identical interface boards, drivers, and speed be used for these Ethernet connections. Ethernet connections/drivers of different types and/or speeds may cause problems, as all the internal messages through those Ethernet links are sent, for high-availability reasons, in parallel, and must be processed at the peer(s) without delay.*

SG complies with the following standards:

- ANSI (1992, 1996) MTP, SCCP
- ITU (1993, 1997) MTP, SCCP
- China MTP
- SS7 MTP3-User Adaptation Layer (M3UA), RFC 3332, September 2002
- SS7 MTP3-User Adaptation Layer (M3UA), RFC 4666, September 2006
- M3UA Implementer's Guide, draft-ietf-sigtran-m3ua-implementors-guide-01.txt
- M3UA SG-SG Communication, draft-bidas-sigtran-sgsg-01.txt, September 2002
- Stream Control Transmission Protocol (SCTP), RFC 2960, Oct. 2000
- Stream Control Transmission Protocol (SCTP) Implementer's Guide, draft-ietf-tsvwg-

sctpimpguide-06.txt, May 2002

- Stream Control Transmission Protocol (SCTP) Checksum Change, RFC 3309, September 2002
- SNMPv1, RFC 1157
- SNMPv2, RFC 1905, RFC 1906
- Security Architecture for Internet Protocol, RFC 2401
- Site Security Handbook, RFC 2196

NEW FEATURES

Enhancements for 1.9.0

- Significant D7 performance improvements on CentOS/RedHat 6.3
- LKSCTP support added to D7/SG/SGC stack, which provides further performance boost
  - Red Hat Enterprise Linux 6.3, kernel 2.6.32-279.el6.x86_64
  - CentOS release 6.3, kernel 2.6.32-279.el6.x86_64

Enhancements for 1.8.1

- Linux operating system support
  - Red Hat Enterprise Linux 6.3, kernel 2.6.32-279.el6.x86_64
  - CentOS release 6.3, kernel 2.6.32-279.el6.x86_64

Enhancements for 1.8.0

- Linux operating system support (Simplex only)
  - Red Hat Enterprise Linux 6.3, kernel 2.6.32-279.el6.x86_64
  - CentOS release 6.3, kernel 2.6.32-279.el6.x86_64

Enhancements for 1.7.5

- IPv6 Support on Linux

Enhancements for 1.7.2

- Multiuple SP support in case Routing Context is missing in the incoming message.
- Red Hat Enterprise Linux AS release 5.5 kernel 2.6.18.194.el5

Enhancements for 1.7.1

- 24 bit PC size for ITU: 24 bit PC size support for ITU has been added

Enhancements for 1.7.0

- IPv6 support
- SG/SGC OAM API

Enhancements for 1.6.2

- None

Enhancements for 1.6.1

- None

Enhancements for 1.6.0

- Support for the Linux operating system
  - Red Hat Enterprise Linux AS release 4 (Nahant Update 6) kernel 2.6.9-67.ELsmp
  - CentOS release 5.2 (Final) kernel 2.6.18-92.1.10.el5

Enhancements for 1.5.10

- None

Enhancements for 1.5.1

- HDCII-LPe board support for LSL on x86/Sparc platform
- HDCII-LPe board support for HSL on x86/Sparc platform

Signaling Gateway 1.5.1
- Support for the unified SG package for Solaris 8/9/10 (CRSnn16989)

Signaling Gateway 1.5.0
- Support for Solaris 10
- Support for Solaris 10 native sctp stack
- Support for database to text conversion for SG (CRSnn16891)

Signaling Gateway 1.1.1
- Distributed7 (D7) 1.4.0 support

Signaling Gateway 1.1.0
- cPCI support
- Local SCCP services support (e.g., GTT)
- SG to SG M3UA offload support
- Eight (8) node clustering support
- Explicit Congestion Notification support in SCTP
- Hostname resolution support

Signaling Gateway 1.0.0
- SG functions mainly as a signaling agent that provides an SS7-IP interworking solution based on the IETF SIGTRAN protocol. This seamless interworking solution allows an IP application to use MTP services from a remote SG as if they were from its local stack
- SG distributes incoming SS7 messages to ASs in the IP domain by consulting its internal routing table, where each route key maps to a unique AS. Messages are routed to an AS based active/standby or load sharing settings of an AS's ASPs
- M3UA messages from the ASPs are distributed to the active SGPs running on SG, where they are converted back to MTP3 messages and forwarded to the MTP3 layer
- SG supports multiple logical signaling gateways running concurrently on a distributed platform
- SG can be configured to run as a Signaling End Point (SEP) or as a gateway Signaling Transfer Point (STP)
- SG offers high availability by distributing traffic and configuration data over two hosts
- SG is fault tolerant with a distributed MTP, redundant LAN cluster, SCTP multihoming, and redundant SGP and internal message routing among SGPs
- Fault Management includes Application Process Management (APM) for automatic coordination of platform startup and shutdown, automatic restarting of failed processes, and automatic startup of all processes upon system reboot
- SG has alarm reporting, a daily event log file and a runtime tracing utility
- SG uses SCTP for transportation security, including blind denial of service attacks, flooding or blind masquerade. Connection requests are accepted only from an ASP that is configured in SG

OPERATIONAL/PROGRAMMING IMPACTS

The following items summarize information or changes in this release that impact the operation or programming interface of SG:

- Please see the *Signaling Gateway User Manual* for information about the changes in the MML commands

DOCUMENTATION

The *Signaling Gateway User Manual* is provided with the software. This manual provides information on installation of the software, operation of the provided applications, configuration of the software and troubleshooting.

The *Signaling Gateway Compliance Statements* are provided with the software. This manual provides information about the software's compliance with the supported standards.

KNOWN PROBLEMS

CR Number	Description	Remarks
CRSnn17590	System freeze under load during Distributed Operation	On Linux RH7.3 platform with 3.10.0-514.26.1.el7.x86_64 kernel the D7 hosts could freeze under high load during the distributed operation

***Note**: Please see the README file and/or the BUGS file for a complete list of all reported problems and/or requested enhancements.*

COMPATIBILITY

INSTALLATION NOTES

Please see the Installation chapter of the Signaling Gateway User Manual for detailed installation instructions. Signaling Gateway 1.9.7 uses:

- NewNet Distributed7 1.9.7 on the Solaris 10 platform
- NewNet Distributed7 1.9.7 on the Linux platform

Please refer to the D7 1.9.7 Release Notes for further information about supported platforms and patch levels.

Please see the README text file for additional installation information that may not be in the manual.

DOCUMENTATION UPDATES

1. IPv6 SUPPORT

IPv6 Support Specifications

1. IPv6 is supported for Sigtran connectivity.
2. Operation as an IPv4 node is supported for backward compatibility. In this mode D7 SGSGC will behave exactly the same as before IPv6 support. IPv6 infrastructure will not be used and therefore connectivity with IPv6 nodes will not be possible.
3. Different IPv6 address formats are supported: IPv6 long format, IPv6 short format and IPv4 Mapped IPv6 format.
4. When configured as an IPv6 node, connectivity with IPv4 nodes is not possible.
5. Hybrid stack mode is supported. In other words, D7 SGSGC can be configured as an IPv6 node with both an IPv6 address and an IPv4 address (IPv4 Mapped IPv6) to be included in the endpoint so that both IPv6 and IPv4 networks are utilized. In other words, both IPv4 and IPv6 links (mixed) can be used in a multi-homed SCTP association towards a remote peer.

IPv4/IPv6 Configuration

In order to configure a D7 SGSGC node as an IPv4 node, the local process simply needs to be configured with IPv4 addresses. If even the first of the IP addresses configured for the local process is an IPv6 address in any format then the Sigtran node will be an IPv6 node.

2. SG OAM API Implementation

Below list of functions are available in SG OAM library:

Release 3.x.y	Distributed7	Comments
-	oam_sgas	This function has no former equivalent
-	oam_sgasp	This function has no former equivalent
-	oam_sgastfc	This function has no former equivalent
-	oam_sgdpc	This function has no former equivalent
-	oam_sgrk	This function has no former equivalent
-	oam_sgrkrng	This function has no former equivalent
-	oam_sgsgp	This function has no former equivalent
-	oam_sgspna	This function has no former equivalent
-	oam_sgspmc	This function has no former equivalent
-	oam_sgpsg	This function has no former equivalent
-	oam_sgpsgp	This function has no former equivalent

Function oam_sgas:

Description

oam_sgas Performs a multitude of managed object (MO) related operations on the SG Application Server (SGAS) MO for a specific signaling point.

NOTE: This function call must include the ***<oam_sgsgc.h>*** *header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgas(int sp , oam_opers_e oper , const oam_sgas_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGAS MO and may assume a value from the following list:

- E_OPER_ADD - Add a new AS configuration to the signaling point specified.
- E_OPER_DELETE - Deletes an existing AS configuration for the signalling point specified.
- E_OPER_MODIFY - Modify parameters associated with an existing AS configuration.
- E_OPER_DISPLAY - Retrieve/display information about the AS configuration specified.
- E_OPER_GET_FIRST - Retrieve/display information about the first instance for the AS configuration specified.
- E_OPER_GET_NEXT - Retrieve/display information about the next AS configuration for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgas_t*** which contains information about the AS of interest. Prior to calling the ***oam_sgas()*** function, all appropriate fields within the ***oam_sgas_t*** structure should be initialized by the application.

Function oam_sgasp:

Description

oam_sgasp Performs a multitude of managed object (MO) related operations on the SG Application Server Process (SGASP) MO.

NOTE: This function call must include the ***<oam_sgsgc.h>*** *header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgasp(int sp , oam_opers_e oper , const oam_sgasp_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGASP MO and may assume a value from the following list:

- E_OPER_ADD - Add a new ASP configuration to the signaling point specified.
- E_OPER_DELETE - Deletes an existing ASP configuration for the signalling point specified.
- E_OPER_MODIFY - Modify parameters associated with an existing ASP configuration.
- E_OPER_DISPLAY - Retrieve/display information about the ASP configuration specified.
- E_OPER_GET_FIRST - Retrieve/display information about the first instance for the ASP configuration specified.
- E_OPER_GET_NEXT - Retrieve/display information about the next ASP configuration for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgasp_t*** which contains information about the ASP of interest. Prior to calling the ***oam_sgasp()*** function, all appropriate fields within the ***oam_sgasp_t*** structure should be initialized by the application.

Function oam_sgastfc:

Description
oam_sgastfc Performs a multitude of managed object (MO) related operations on the SG Application Server - Application Server Process Traffic Control (SGASPTFC) MO which defines traffic control for an AS and ASP.

NOTE: This function call must include the ***<oam_sgsgc.h>*** *header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgastfc(int sp , oam_opers_e oper , const oam_sgas_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGASTFC MO and may assume a value from the following list:

• E_OPER_MODIFY - Modify the traffic status of remote AS.
• E_OPER_DISPLAY - Retrieve/display information about the traffic status of remote AS.
• E_OPER_GET_FIRST - Retrieve/display information about the first instance for the traffic status of remote AS specified.
• E_OPER_GET_NEXT - Retrieve/display information about the next the traffic status information of remote AS for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgastfc_t*** which contains information about the traffic status of remote AS of interest. Prior to calling the ***oam_sgastfc()*** function, all appropriate fields within the ***oam_sgastfc_t*** structure should be initialized by the application.

Function oam_sgdpc:

Description

oam_sgdpc Performs a multitude of managed object (MO) related operations on the SG Destination Point Code (SGDPC) MO which is reachable by the SG.

NOTE: This function call must include the ***<oam_sgsgc.h>*** *header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgdpc(int sp , oam_opers_e oper , const oam_sgdpc_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGDPC MO and may assume a value from the following list:
• E_OPER_ADD - Add a new point code that an SG can reach to the signaling point specified.
• E_OPER_DELETE - Deletes an existing point code that an SG can reach for the signalling point specified.
• E_OPER_MODIFY - Modify parameters associated with an existing point code that an SG can reach.
• E_OPER_DISPLAY - Retrieve/display information about the point code specified.
• E_OPER_GET_FIRST - Retrieve/display information about the first instance for the point code specified.
• E_OPER_GET_NEXT - Retrieve/display information about the next point code for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgdpc_t*** which contains information about the point code that an SG can reach. Prior to calling the ***oam_sgdpc()*** function, all appropriate fields within the ***oam_sgdpc_t*** structure should be initialized by the application.

Function oam_sgrk:

Description

oam_sgrk Performs a multitude of managed object (MO) related operations on the SG Routing Key (SGRK) MO which defines the route key associated with an AS that is served by the SG.

*NOTE: This function call must include the **<oam_sgsgc.h>** header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgrk(int sp , oam_opers_e oper , const oam_sgrk_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGRK MO and may assume a value from the following list:

- E_OPER_ADD - Add a new route key to the signaling point specified.
- E_OPER_DELETE - Deletes an existing route key for the signalling point specified.
- E_OPER_MODIFY - Modify parameters associated with an existing route key.
- E_OPER_DISPLAY - Retrieve/display information about the route key specified.
- E_OPER_GET_FIRST - Retrieve/display information about the first instance for the route key specified.
- E_OPER_GET_NEXT - Retrieve/display information about the next route key for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgrk_t*** which contains information about the route key of interest. Prior to calling the ***oam_sgrk()*** function, all appropriate fields within the ***oam_sgrk_t*** structure should be initialized by the application.

Function oam_sgrkrng:

Description
oam_sgrkrng Performs a multitude of managed object (MO) related operations on the SG Routing Key Range (SGRKRNG) MO which defines a range that is associated with an existing route key that has any TYPE except DPC.

*NOTE: This function call must include the **<oam_sgsgc.h>** header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgrkrng(int sp , oam_opers_e oper , const oam_sgrkng_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGRKRNG MO and may assume a value from the following list:

- E_OPER_ADD - Add a new routing key range to the signaling point specified.
- E_OPER_DELETE - Deletes an existing routing key range for the signalling point specified.
- E_OPER_DISPLAY - Retrieve/display information about the routing key range specified.

• E_OPER_GET_FIRST - Retrieve/display information about the first instance for the routing key range specified.
• E_OPER_GET_NEXT - Retrieve/display information about the next routing key range for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgrkrng_t*** which contains information about the routing key range of interest. Prior to calling the ***oam_sgrkrng()*** function, all appropriate fields within the ***oam_sgrkrng_t*** structure should be initialized by the application.

Function oam_sgsgp:

Description
oam_sgsgp Performs a multitude of managed object (MO) related operations on the SG Signaling Gateway Process (SGSGP) MO.

*NOTE: This function call must include the **<oam_sgsgc.h>** header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgsgp(int sp , oam_opers_e oper , const oam_sgsgp_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGSGP MO and may assume a value from the following list:
• E_OPER_MODIFY - Modify parameters associated with an existing signaling gateway process.
• E_OPER_DISPLAY - Retrieve/display information about the signaling gateway process specified.
• E_OPER_GET_FIRST - Retrieve/display information about the first instance for the signaling gateway process specified.
• E_OPER_GET_NEXT - Retrieve/display information about the next signaling gateway process for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgsgp_t*** which contains information about the signaling gateway process of interest. Prior to calling the ***oam_sgsgp()*** function, all appropriate fields within the ***oam_sgsgp_t*** structure should be initialized by the application.

Function oam_sgspna:

Description
oam_sgspna Performs a multitude of managed object (MO) related operations on the SG Signaling Point to Network Appearance Mapping (SGSPNA) MO.

*NOTE: This function call must include the **<oam_sgsgc.h>** header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgspna(int sp , oam_opers_e oper , const oam_sgspna_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGSPNA MO and may assume a value from the following list:

- E_OPER_ADD - Add a new mapping between a Network Appearance and a Signaling Point to the signaling point specified.
- E_OPER_DELETE - Deletes an existing mapping between a Network Appearance and a Signaling Point for the signalling point specified.
- E_OPER_MODIFY - Modify parameters associated with an existing mapping between a Network Appearance and a Signaling Point.
- E_OPER_DISPLAY - Retrieve/display information about the mapping between a Network Appearance and a Signaling Point specified.
- E_OPER_GET_FIRST - Retrieve/display information about the first instance for the mapping between a Network Appearance and a Signaling Point specified.
- E_OPER_GET_NEXT - Retrieve/display information about the next mapping between a Network Appearance and a Signaling Point for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgspna_t*** which contains information about the mapping between a Network Appearance and a Signaling Point. Prior to calling the ***oam_sgspna()*** function, all appropriate fields within the ***oam_sgspna_t*** structure should be initialized by the application.

Function oam_sgspmc:

Description

oam_sgspmc Performs a multitude of managed object (MO) related operations on the SG Signaling Point Management Cluster (SGSMPC) MO.

NOTE: This function call must include the ***<oam_sgsgc.h>*** *header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgspmc(int sp , oam_opers_e oper , const oam_sgspmc_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGSPMC MO and may assume a value from the following list:

- E_OPER_DISPLAY - Retrieve/display information about the SPMC specified.
- E_OPER_GET_FIRST - Retrieve/display information about the first instance for the SPMC specified.
- E_OPER_GET_NEXT - Retrieve/display information about the next SPMC for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgspmc_t*** which contains information about the SPMC of interest. Prior to calling the ***oam_sgspmc()*** function, all appropriate fields within the ***oam_sgspmc_t*** structure should be initialized by the application.

Function oam_sgpsg:

Description
oam_sgpsg Performs a multitude of managed object (MO) related operations on the SG peer SG (SGPSG) MO.

NOTE: This function call must include the ***<oam_sgsgc.h>*** *header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgpsg(int sp , oam_opers_e oper , const oam_sgpsg_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGPSG MO and may assume a value from the following list:

- E_OPER_ADD - Add a new a remote peer SG configuration to the signaling point specified.
- E_OPER_DELETE - Deletes an existing a remote peer SG configuration for the signalling point specified.
- E_OPER_MODIFY - Modify parameters associated with an existing remote peer SG configuration.
- E_OPER_DISPLAY - Retrieve/display information about the a remote peer SG configuration specified.
- E_OPER_GET_FIRST - Retrieve/display information about the first instance for the a remote peer SG configuration specified.
- E_OPER_GET_NEXT - Retrieve/display information about the next remote peer SG configuration for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgpsg_t*** which contains information about the remote peer SG configuration of interest. Prior to calling the ***oam_sgpsg()*** function, all appropriate fields within the ***oam_sgpsg_t*** structure should be initialized by the application.

Function oam_sgpsgp:

Description
oam_sgpsg p Performs a multitude of managed object (MO) related operations on the SG peer SGP (SGPSG) MO.

NOTE: This function call must include the ***<oam_sgsgc.h>*** *header file.*

MT LEVEL
MT-Safe

SYNOPSIS
int oam_sgpsgp(int sp , oam_opers_e oper , const oam_sgpsgp_t * data);

sp This argument specifies the signaling point that is of interest and may assume a value within the [0, 7] range.

oper This argument specifies the operation to be performed on the SGPSGP MO and may assume a value from the following list:

- E_OPER_ADD - Add a new a remote peer SGP configuration to the signaling point specified.
- E_OPER_DELETE - Deletes an existing a remote peer SGP configuration for the signalling point specified.
- E_OPER_MODIFY - Modify parameters associated with an existing remote peer SGP configuration.
- E_OPER_DISPLAY - Retrieve/display information about the a remote peer SGP configuration specified.
- E_OPER_GET_FIRST - Retrieve/display information about the first instance for the a remote peer SGP configuration specified.
- E_OPER_GET_NEXT - Retrieve/display information about the next remote peer SGP configuration for the signaling point specified.

data This argument points to the user-space buffer of type ***oam_sgpsgp_t*** which contains information about the remote peer SGP configuration of interest. Prior to calling the ***oam_sgpsgp()*** function, all appropriate fields within the ***oam_sgpsgp_t*** structure should be initialized by the application.

Resolved CRs

1.9.7

CRSnn17603 aspd connection audit timer could stop if the audit thread fails

Detailed Description aspd connection audit timer could stop if the audit thread fails

Solution Aspd audit timer restart is taken out of the audit thread and placed in the timer handler routine

Programming Impacts None

Operational Impacts None

Documentation Impacts None

MML Help Text Impact None

MO and DB File Impact None

CRSnn17589 LKSCTP is made default for Linux releases

Detailed Description SCTP robustness is required to be improved

Solution LKSCTP is made default option for Linux releases

Programming Impacts None

Operational Impacts None

Documentation Impacts None

MML Help Text Impact None

MO and DB File Impact None

1.9.6

CRSnn17585 2048 IPSP Support

Detailed Description Earlier Releases support 255 IPSP connections

Solution SG/SGC processes are enhanced to support 2048 IPSP connections.

Programming Impacts None

Operational Impacts None

Documentation Impacts None

MML Help Text Impact None

MO and DB File Impact None

1.9.5

CRSnn17566 enable adding own pc for another sp

Detailed Description aspd process does not allow to config point codes of own SP. And it was not possible to route a message from one SP towards another SP over the Sigtran network.

Solution	aspd process is modified to allow its own point codes as sgcdpc's.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17446 fix c7 sgc package for lnx

Detailed Description	C7 sg/sgc package was not being installed properly.
Solution	C7 sg/sgc installation scripts are corrected to install successfully.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17569 priority based forwarding

Detailed Description	Aspd process routes messages over the highest priority sgp which is reachable via the local host. It does not take into consideration higher priority sgp's defined on the other aspd processes within the cluster.
Solution	When this functionality is enabled the aspd process routes messages over the highest priority sgp on the cluster. In order not to break the backward compatibility in operations the oam_m3_prio_forwarding flag in the aspd.conf file must be set to 1.
Programming Impacts	None
Operational Impacts	The oam_m3_prio_forwarding field in the aspd.conf file must be set to1 to activate this functionality before starting the aspd process.
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17576 move msgs on the fd quickly to internal queues and handle processing in a seperate thread.

Detailed Description	Under burst situations the connection between the Gateway_X connection aspd/sgpd process and the upm driver was getting congested.
Solution	Preventive solutions are implemented to avoid the congextion between the aspd/sgpd process and the upm driver
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17579 Double associaition guard timer startedvi

Detailed Description	The double sctp association guard timers could cause association state corruption after associations bounce
Solution	This problem is fixed in the SG/SGC code to handle the sctp association guard timers proberly in case of association bounce.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.9.4

CRSnn17546 ASPD crash

Detailed Description	ASPD process crashes with a single SCTP stream.
Solution	Bug fix implemented to be able to work with single stream.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17556 fPIC option required for OAM library on Linux

Detailed Description	fPIC option needed for the OAM library.
Solution	New build option added for fPIC.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.9.3

None

1.9.2

CRSnn17449 SCTPD core dumps during shutdown

Detailed Description	SCTPD daemon dumps core intermittently during shutdown on Linux.
Solution	Bug fix implemented to nullify endpoint pointers during shutdown.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17504 Reg/dereg race in SG SEP mode

Detailed Description	Sometimes SG fails to register for ISUP and SCCP user parts when operating in SEP mode.
Solution	Registration and deregistration race has been fixed to prevent the failure.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17509 Too many Sigtran gateway registration error logs

Detailed Description	Gateway registration attempts fail but the retries are done without a sleep causing too many error logs.
Solution	Fix has been implemented to sleep 1 second between retries.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.9.1

CRSnn16991 Optional aspid in aspup-ack

Detailed Description	ASPID in ASPUP-Ack is optional in RFC 4666.
Solution	Accept ASPID in ASPUP-Ack.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17315 log the message discard events at SCTP

Detailed Description Log message discard events due to congestion.
Solution New log added.

Programming Impacts None
Operational Impacts None
Documentation Impacts None
MML Help Text Impact None
MO and DB File Impact None

CRSnn16991 DAVA/DUNA handling doesn't work with no-na no-rc

Detailed Description DPC not becoming accessible even after DAVA.
Solution DAVA/DUNA processing has been fixed for the no-na no-rc case.

Programming Impacts None
Operational Impacts None
Documentation Impacts None
MML Help Text Impact None
MO and DB File Impact None

CRSnn17467 SG deadlock

Detailed Description SGPD process gets stuck during association fluctuations.
Solution Deadlock scenario has been prevented.

Programming Impacts None
Operational Impacts None
Documentation Impacts None
MML Help Text Impact None
MO and DB File Impact None

1.9.0

CRSnn17455 aspia-ack behavior corrected

Detailed Description If the ASP receives an ASP Inactive Ack without having sent an ASP Inactive message, the ASP should now consider itself to be in the ASP-INACTIVE state. But D7 simply ignores the ASPIA-ack.
Solution ASPIA-ack behavior is corrected.

Programming Impacts None
Operational Impacts None

Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16991 SGPD process dumps core

Detailed Description	SGPD process dumps core intermittently.
Solution	Root cause found as uninitialized variable and fix provided.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17315 LKSCTP support

Detailed Description	LKSCTP support needed on Linux platforms.
Solution	LKSCTP support has been added to D7/SG/SGC.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.8.1

CRSnn17446 sg(c)_setrelease problems

Detailed Description	1.8.0 has a bug in sg(c)_setrelease scripts for downgrade.
Solution	Bug fix implemented.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.8.0

CRSnn17439 IPSP reroute messages

Detailed Description	Sigtran traffic in IPSP mode should reach the destination even if the destination is only reachable via another cluster node.

Solution	Rerouting message support has been added for IPSP mode.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17446 Restricted D7 package Changes

Detailed Description	D7 will support restricted packages for non-root operation.
Solution	Support for non-root operation with no setuid has been implemented.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17447 daud problem for some destinations

Detailed Description	SGC does not send DAUD for some destinations in case of multiple stacks using the same NAID.
Solution	Bug found and fixed in the M3UA library.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17448 aspac-ack problem with no-rc

Detailed Description	SGC sends back error in response to ASPAC-Ack.
Solution	In case of no RC in the ASPAC-Ack and multiple inactive AS's at the time of the message reception, error is returned. This behavior is fixed.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.7.7

CRSnn17428 IPv6 fix for Linux

Detailed Description	Sigtran stack not coming up using IPv4 when the IPv6 stack is disabled.
Solution	Bug found and fixed in the NewNet SCTP stack.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17431 IPv6 MTU fix for Linux

Detailed Description	Sigtran stack not working with IPv6.
Solution	Bug found related with reading the correct MTU values, which is hit only under certain IPv4/IPv6 address combinations on a system.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.7.6

CRSnn17391 ASPD deadlock

Detailed Description	Incorrect SIGPOLL handling in the ASPD process caused a deadlock.
Solution	SIGPOLL handling has been fixed.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17308 Race among SCTP timers

Detailed Description	Previous fix in 1.7.1 has been improved.
Solution	IDLE state also protected in the timer timeout handling process.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None

MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17418 Incorrect handling of MTP3 Congestion test messages

Detailed Description	MTP3 Congestion test messages caused incorrect mlogs.
Solution	Functionality has been fixed and the mlogs are prevented.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17417 Periodic DAUD functionality has been added

Detailed Description	Sigtran layer is required to send DAUD messages periodically for unreachable remote destinations.
Solution	Functionality has been implemented in the ASPD process.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17420 TFA error handling

Detailed Description	In some situations such as congestion or due to too many DAVA messages at the same time, TFA message from Sigtran towards the MTP3 layer may fail. However, in this case the Sigtran destination state stays in Accessible state whereas the MTP3 state stays in Inaccessible state, causing inconsistency between destination availability states among different stack layers.
Solution	TFA handling has been fixed to handle error conditions as well.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.7.5

CRSnn17125 M3UA Statistics Logs

Detailed Description	Minor improvements in mlogs and m3uastats time operation
Solution	Implemented in the M3UA code.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None

MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17366 IPv6 Support on Linux

Detailed Description	Ipv6 support is requested for Linux Platforms
Solution	The Ipv6 support has been implemented for Linux platforms also. The MO configuration for IPv6 is the same as the Solaris platforms.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17384 Association Setup Problem

Detailed Description	An issue is identified in SCTP association setup on Linux platforms.
Solution	The problem has been identified in the SCTP library and addressed.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17387 SCTP Bug

Detailed Description	SG/SGC software does not function properly when the remote peers have the same IP address but different ports for SCTP associations.
Solution	SCTP interface is corrected to handle the same IP different port condition for remote peers properly.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.7.4.2

CRSnn16991 Package ownership issue

Detailed Description	The SG/SGC package is not created with the right package ownership flags on Linux platforms.
Solution	Packageing scripts is corrected to install the SG/SGC packages with the right ownership flags.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None

MO and DB File Impact None

1.7.4.1

CRSnn17357 **SG-SG issue with PC states**

Detailed Description SG-SG configurations in distributed mode could experience inconsistent Destination states among the SGP's of the cluster.

Solution Destination State synchronization problem among the SGP's of the cluster is fixed.

Programming Impacts None
Operational Impacts None
Documentation Impacts None
MML Help Text Impact None
MO and DB File Impact None

1.7.4

CRSnn17348 **Remote peer state problem**

Detailed Description The operation states of remote peers are lost after process restart.

Solution Fix provided for the correct handling of database files.

Programming Impacts None
Operational Impacts None
Documentation Impacts None
MML Help Text Impact None
MO and DB File Impact None

CRSnn17345 **Problems with ASPTM exchanges**

Detailed Description ASP's internal state is corrupted and ASP activation fails.

Solution Bugs are removed that corrupts ASP's internal tables.

Programming Impacts None
Operational Impacts None
Documentation Impacts None
MML Help Text Impact None
MO and DB File Impact None

1.7.3

CRSnn17343 **Invalid ASPID problem**

Detailed Description ASPD returns "invalid aspid" error for "mod-sgcasp" command even though the ASP is a member of the cluster.

Solution Fix implemented in the process list handling of ASP.

Programming Impacts None

Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17344 SNMP fixes

Detailed Description	Various MO's are returned incorrectly via SNMP.
Solution	Fixes are implemented for SNMP functionality.

Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.7.2

CRSnn17324 Invalid length message handling improved

Detailed Description	ASPD goes into infinite loop when a message with invalid length is received.
Solution	Implement necessary corrections in message handling logic.

Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17326 Optional NAID for SG-SG mode

Detailed Description	NAID was required by SG in the incoming messages.
Solution	Implement the necessary corrections such that NAID is optional as per RFC.

Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17330 SG-SG improvements

Detailed Description	ASPTM handling needs to be revised to interoperate with the remote SG.
Solution	ASPTM handling is improved by not requiring ASPAC from the remote SG.

Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None

MO and DB File Impact	None

CRSnn17331 SG-SG association setup problem

Detailed Description	Associations don't come up automatically after restart in SG-SG mode.
Solution	A bug in our M3UA library is fixed to prevent this problem.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17334 Optional Routing Context with multiple SP's

Detailed Description	D7 with multiple SP's needs to be interoperable with remote peers which doesn't send RC.
Solution	DPC field in the incoming messages is used to route incoming messages towards the correct SP's.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	Yes.
MML Help Text Impact	Yes.
MO and DB File Impact	None

CRSnn17337 RTSET/SGCDPC problem

Detailed Description	Destination accessibility state cannot be recovered in the cluster after D7 shutdown on a host.
Solution	Improve the ASPD and UPM driver shutdown process such that the race window in the UPM state machine is reduced during D7 shutdown.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17338 MS bit set only for optional NAID

Detailed Description	It is required that different values can be set for NAID and still it is not sent across the network.
Solution	Previously NAID was required to be set as 0xFFFFFFFF (i.e. 4294967295 or -1) when it shouldn't be sent. Now setting only the most significant bit to 1 will be sufficient, which is backwards compatible as well.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	Yes.
MML Help Text Impact	Yes.
MO and DB File Impact	None

1.7.1

CRSnn17308 Some associations don't come up after network issues

Detailed Description Some associations don't come up under certain conditions.

Solution Fix the race among the timers.

Programming Impacts None

Operational Impacts None

Documentation Impacts None

MML Help Text Impact None

MO and DB File Impact None

CRSnn17314 24 bit ITU support on SGSGC

Detailed Description 24 bit point code support for ITU

Solution Implement the new functionality as requested.

Programming Impacts None

Operational Impacts None

Documentation Impacts None

MML Help Text Impact None

MO and DB File Impact None

1.7.0

CRSnn17217 SG/SGC OAM API

Detailed Description An SG/SGC OAM API is requested by the customer.

Solution An implementation of SG/SGC OAM API will be provided.

Programming Impacts None

Operational Impacts None

Documentation Impacts None

MML Help Text Impact None

MO and DB File Impact None

CRSnn17225 IPv6 Support for SIGTRAN connectivity

Detailed Description IPv6 will be supported for SIGTRAN connectivity.

Solution	The implementation will be backward compatible with IPv4 operation. Different IPv6 address formats will be supported (IPv6 long format, IPv6 short format and IPv4 mapped IPv6 format).
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17226 Problem adding SGP's

Detailed Description	Customer experienced a problem during MML operations to add new remote processes..
Solution	Bug in our M3UA library to be fixed.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17256 Incorrect audit on SGC

Detailed Description	Customer complains about SGC sending an extra audit message when a new DPC isadded.
Solution	Bug in our M3UA library to be fixed.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.6.2

CRSnn17222 Problem connecting with Siemens SG

Detailed Description Problem arises when the SGC sends a DAUD message with the affected SPC point code. D7/SGC needs a DAVA message to be received in order to set the SPC point code as "accessible", but the Siemens SG does not send either a DAVA or a DUNA message. According to Siemens, the DAUD message is only needed for remote SPC, i.e. SS7 point codes that are beyond the SG.

Solution The RFC 4666 in section 3.4.3 says:

The DAUD message MAY be sent from the ASP to the SGP to audit the availability/congestion state of SS7 routes from the SG to one or more affected destinations.

Consequently D7/SGC should not need a DAVA message to be received from the SG as it´s and adjacent point code. From our point of view, the SPC of the adjacent Signaling Gateway should be treated as accessible by the SGC, as soon as the SG is available from an M3UA pint of view.

The required modifications are:

1. New field for SGCDPC MO to indicate an adjacent PC; hence modifications for OAM tables and functions to accommodate this change.

2. Modifications in our M3UA library to alter the PC activation logic.

3. Modifications in db2date and db2text to accommodate the new field.

Programming Impacts None

Operational Impacts None

Documentation Impacts None

MML Help Text Impact None

MO and DB File Impact None

CRSnn17221 Default bash shell script setup

Detailed Description Bash profile is not being sourced when switching to sgadm/ascadm user.

Solution ".bash_profile" script will be created instead of ".bashrc" during installation.

Programming Impacts None

Operational Impacts None

Documentation Impacts None

MML Help Text Impact None

MO and DB File Impact None

CRSnn17218 rtset-sgcdpc inconsistency and SCON handling

Detailed Description	M3UA PAUSE/RESUME indications are not created even though the only 2 associations towards a DPC are going down/up. M3UA layer accepts DAVA/DUNA messages from SG's even though they are not defined via MML. Remote SGP sends high load of SCON messages even if they are with the same congestion level. All of these SCON messages are sent upwards to UPM from M3UA layer. This can cause congestion at the upper layers.
Solution	Modify SGC such that only the SG's defined via MML for a DPC can send DAVA/DUNA, the rest is ignored. Also configurable behavior via the configuration file. Modify SCON handling such that there is an inhibit period of 2 seconds in which SCON messages with the same congestion level are ignored.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17215 SCTP timer array size is not sufficient

Detailed Description	SCTP timer array size is not sufficient for the customer's configuration.
Solution	Increased the SCTP timer array size
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17203 ASP and IPSP role on SGC on the same SP

Detailed Description	Customer needs to be able to connect to both SGP's and IPSP's on an SGC deployment on the same SP.
Solution	Implemented the necessary modifications on SGC.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17202 db2date compatibility problem

Detailed Description	Customer needs to be able to connect to both SGP's and IPSP's on an SGC deployment on the same SP.
Solution	Implemented the necessary modifications on SGC.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.5.10

CRSnn17212 High CPU usage by sgpd/aspd

Detailed Description	CPU usage increases due to the high number of messages on the _aspd queue which is visible in hat_collects and alarmlogs.
Solution	Ensure any outstanding PC_STATE indications are sent first before forwarding a message. Ensure a message cannot be forwarded multiple times among the hosts. Add new mlogs to understand the SPMC table states on the cluster hosts in terms of PC reachability.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17213 sctpd.conf path logic modified

Detailed Description	Enable to run aspd/sgpd without using sgcadm and sgadm users. Allow aspd to look for SGCHOME and sgpd to look for SGHOME when trying to determine the path of the sctpd.conf file. Currently SGHOME is checked and then if it is null, SGCHOME is checked.
Solution	Modify the logic which determines the path of the sctpd.conf file.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.5.9

CRSnn17155 Remove deadlock conditions in M3UA

Detailed Description	Customer experiences MML timeouts during SGC configuration, even for display commands such as d-sgcdpc:;
Solution	Removed deadlock conditions in M3UA.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17145 M3UA statistics add-on

Detailed Description	D7-R1x-STAT-010: It shall be possible to define the name for the statistics file, including date/ time in the file name defined by applying YYYY, MM, DD, hh, mm, ss as wildcard and in any order. D7-R1x-STAT-020: The full path for the statistics file can be configured in aspd.conf. D7-R1x-STAT-030: The export to CSV should not clear statistics in each case as defined by parameter -e. It shall be possible to define, if the statistics will be cleared when exporting to CSV. Parameter -e shall export data to CSV only and not clear the statistics. D7-R1x-STAT-031: The combined parameter -e for exporting data to CSV shall export statistics and clear them if used with -c parameter. E.g. # m3uaststs -e -c
Solution	Added the necessary functionalities.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.5.8

CRSnn17142 Master ASPD assignment improved

Detailed Description	The ASPD process tries to become master for only three (3) seconds, and this is not enough for a heavily configured 4-host cluster. Due to a forced shutdown of the D7 stack, the shutdown process takes up to 30 seconds
Solution	Made the retry interval 300 seconds.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None

MO and DB File Impact None

1.5.7

CRSnn17125 M3UA statistics

Detailed Description M3UA statistics should be kept and displayed by the NewNet SIGTRAN stack.

Solution

Statistics data is accumulated by SGC, and displayed/cleared/exported by a utility program named
'm3uastats'. It is located in the bin directory of the SGC release. Please use 'm3uastats -h' to see the usage of it.
Examples for m3uastats usage:
>> m3uastats -d all # display all statistics data
>> m3uastats -d sum # display cumulative data (sum of data for all associations)
>> m3uastats -d 20003 # display data for association 20003
>> m3uastats -c all # clear all data
>> m3uastats -c 2 # clear data for association 2
>> m3uastats -e # export data to csv file and clear all data
Exporting to a csv file can also be triggered automatically by the SGC. This can happen either because the periodic csv export functionality is enabled or because a rollover event (value exceeded the limit) occurred for a parameter. Periodically exporting to a csv file can be enabled by configuring the timer named oam_m3_stats_tmr in the aspd.conf file. It is by default commented out (value in milliseconds). You can enable this functionality by modifying the aspd.conf file.

Programming Impacts None
Operational Impacts None
Documentation Impacts None
MML Help Text Impact None
MO and DB File Impact None

1.5.6

CRSnn17106 M3UA timers (aspm and aspt)

Detailed Description Entertain request to configure the timer T(ack) as defined in RFC 3332. According to this RFC: "T(ack) is provisionable, with a default of 2 seconds."

Solution Enabled ASPM and ASPT timers, and made them configurable.
Programming Impacts None
Operational Impacts None
Documentation Impacts None
MML Help Text Impact None

MO and DB File Impact	None

CRSnn17108 Uneven M3UA traffic

Detailed Description	It has been reported that some remote peers receive M3UA messages in an uneven manner. At the D7 cluster side: ASP2 creates twice as much outgoing traffic as ASP1 does, and ASP4 creates twice as much outgoing traffic as ASP3 does, towards the remote peers. As a result, one of the assigned ASPs is significantly dominant for each of D7 AS's. Please note that this happens with the LOADSHARE option enabled in Sigtran configuration.
Solution	Implemented round-robin routing in SGSGC.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17115 No further attempts to send INIT

Detailed Description	SGSGC makes no further attempts (send INIT) to establish an SCTP association after it goes down. There is a bug causing an SPM timer message to get lost, which stops the mechanism that audits SCTP associations.
Solution	Implemented another mechanism to handle SPM messages, thus eliminating message loss.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.5.3

CRSnn17082 SGCDPC pointcodes set to 0-0-0

Detailed Description	SGCDPC pointcodes set to 0-0-0 after upgrade.
Solution	The problem is caused by memory corruption while growing the SCTP association table for more than ten (10) connections. Previously started SCTP connection timers will use the old memory addresses of associations that are already freed, and then allocated for something else (in the customer's case it's the DPC table). Changed SCTP timer function parameter from assoc to assocId.
Programming Impacts	None

Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.5.2

CRSnn17066 Invalid RC in ASPAC messages

Detailed Description	Invalid Routing Context encountered in ASP Active messages If the SGP MO is added (or deleted/re-added) after the AS MO is created, traffic status (via sgcastfc) cannot be activated because the existing code doesn't build the necessary link between the AS and SGP tables. This results in both the respective RCID list index in the AS record and the AS indexes in the SGP table not being updated, so the corresponding ASTFC never gets activated.
Solution	A function has been implmeted to establish the missing link between the SGP and AS tables during add-sgcsgp operation.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17067 Association shutdown/restart problem

Detailed Description	If the same IP address is configured twice by accident via add-sgcsgp (or add-sgcipsp), different MOs are created with the same IP, causing the SCTP association to fail later with error "Address already in use".
Solution	1. Added some checks in the SGCSGP MO (and SGPIPSP) addition, such that the IP address of the new MO is checked against the existing database. 2. When connect() call fails with error "Address already in use", a delete of the existing association is performed (SCTP API provides means to delete the association, even if the corresponding association id is not known). The first fix will prevent case 1 from happening, and the second fix will provide a recovery if the OS association is left open during an SGCSGP disconnect because of case 2.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17069 ASTFC state made persistent

Detailed Description	ASTFC state changes after host restart.
Solution	Added origpid to astfc_rec_t, and modified keysize accordingly.
Programming Impacts	None

Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.5.1

CRSnn17037 Same NAID for SP's with different protocols

Detailed Description	Configuring two SP's (one with ITU the other with ANSI) with no NAID (Network Appearance ID) and trying to distinguish the traffic based on routing context fails because SG/SGC doesn't accept different protocols having the same NAID. In this case, both SP's have NAID=4294967295 (0xffffffff) because operating without NAID is configured by setting it to 4294967295 (0xffffffff) and this should work.
Solution	Don't perform the check for protocol equality when using the same NAID if NAID is equal to 4294967295 (0xffffffff).
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17043 Problem configuring IPSPLIST parameter

Detailed Description	While configuring an IPAS (IP Application Server) managed object, it is requested to be able to add more than 5 ipsp's which is the current limit.
Solution	Increase the IPSP limit that can be added for an IPAS.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	Yes SGC Manual: Section 6.5.3.10: "An IPAS can be assigned a list of up to five IPSP's" should be updated as "An IPAS can be assigned a list of up to eight IPSP's".
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17044 NAID parameter optional

Detailed Description	SG/SGC should be able to not send the NA (Network Appearance) parameter as suggested by RFC4666 section 3.3.1.
Solution	When NAID is set as 4294967295 (0xffffffff) in MML, SG/SGC will not send this parameter.
Programming Impacts	None
Operational Impacts	Yes. When NAID=4294967295 (0xffffffff), SG/SGC doesn't send NA field as NA field is optional.
Documentation Impacts	Yes. SG Manual: Section 5.5.1=>naid paragraph under PARAMETERS heading=> Valid values will be updated as 0-0xffffffff and this comment is to be added: When NAID=4294967295 (0xffffffff), NA field is not sent. Section 5.5.9=>naid paragraph under PARAMETERS heading=> Valid values will be updated as 0-0xffffffff and this comment is to be added: When NAID=4294967295 (0xffffffff), NA field is not sent. Table 5-5 in Chapter 5=> The NAID row of SGSPNA row should have the range value as 0--0xffffffff (instead of 0-0x7fffffff). SGC Manual: Section 7.5.4=>naid paragraph under PARAMETERS heading=> Valid values will be updated as 0-0xffffffff and this comment is to be added: When NAID=4294967295 (0xffffffff), NA field is not sent. Section 7.5.9=>naid paragraph under PARAMETERS heading=> Valid values will be pdated as 0-0xffffffff and this comment is to be added: When NAID=4294967295 (0xffffffff), NA field is not sent. Table 7-5 in Chapter 7=> The NAID row of SGCDPC row should have the range value as 0-0xffffffff (instead of 0-0x7fffffff). Table 7-5 in Chapter 7=> The NAID row of SGCSPNA row should have the range value as 0-0xffffffff (instead of 0-0x7fffffff).
MML Help Text Impact	Yes. Incorporated into the release.
MO and DB File Impact	None

CRSnn17045 ASP Process kill problem

Detailed Description	ASP process keeps getting killed and dumps core (4 host cluster).
Solution	ASP process receives a MSG_LM_REM_AS_STATE_IND (handled by lm) but at the time this message is processed, m3uaMgr->ipasTbl is empty and getElem returns garbage. m3uaMgr->ipasTbl is empty because sync process hasn't even started yet. Solution is to set elem to NULL where appropriate thus getElem will return NULL in this case and it is already handled in the callers.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17046 ASPD core dump during cluster traffic test

Detailed Description	ASP process dumps core during tests at customer's site.
Solution	Null pointer access is prevented in ASTable.C.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17054 Race condition, heap corruption

Detailed Description	ASP process dumps core during tests at customer's site.
Solution	Prevent the heap corruption caused by a race condition in the SCTP library.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn17055 Failure in assigning ASPD master

Detailed Description	ASP master is lost during tests at customer's site.
Solution	Improve the process that assigns the master ASP process (improve the re-try logic).
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

1.5.0.x

CRSnn16989 Implement the unified SG/SGC package for Solaris 8/9/10

Detailed Description	Implement the unified SG/SGC package for Solaris 8/9/10.
Solution	Changed the building environment from Solaris 8 to Solaris 10. Put all the binaries and configuration files used on different Solaris system into package. Modified the postinstall scipt, and appropriate binaries and configuration files when installing. Build twice for sctp comms library and sgp/asp using native sctp and company proprietary sctp.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16970 Uneven distribution in stream number.

Detailed Description	Uneven distribution in stream number.
Solution	Modify the matching algorithm between SLS and stream ID. If the SLS is less than "maximum outbound streams - 1", the mapped stream ID of SLS is "SLS + 1".
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16976 Change sctp.conf parameters in run-time on Solaris 10

Detailed Description	Change sctp.conf parameters in run-time on Solaris 10
Solution	The sgpd can change some SCTP and IP parameters dynamically for specific associations according to the sctpd.conf file once it receives HUP signals.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16891 Support database to text conversion for SG/SGC

Detailed Description	Support database to text conversion for SG/SGC
Solution	Enhance the D7 db2text functionality for SG/SGC.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn15885 Re-dimensioned ASs/RKs on the SG side.

Detailed Description	Re-dimensioned ASs/RKs on the SG side.
Solution	Found the parameters that limited the ASs/RKs. Examined the parameters the modifications woCRSuld impact. Adjusted the size of the ASs/RKs.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn15941 All routing key types that involve "OPC" could not be configured or applied.

Detailed Description	All routing key types that involve "OPC" could not be configured or applied.
Solution	Traced the routing key type issues. Modified the code and then tested to make sure the routing key types supported worked fine.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16247 aspd and sctpd are killed every some minutes on Solaris 9.

Detailed Description	aspd and sctpd are killed every some minutes on Solaris 9.
Solution	Modified aspd and sctpd code to make sema_wait run again if returned for EINTR.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16248 Support override mode of AS for SG/SGC.

Detailed Description	Support override mode of AS for SG/SGC.
Solution	Modified the OAM layer code and M3ua stack layer to support the override mode and implement the override scene.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16288 Support native sctp stack on Solaris 10 or above for SG/SGC

Detailed Description	Support native sctp stack on Solaris 10 or above for SG/SGC.
Solution	Implemented Solaris 10 sctp protocol stack and sctp interface for users. Used sctp api functions to implement sctp comms library. Made the asp/sgp work using the new library without sctpd, then modified all the relating script including build and packit.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16303 Support SG-SGC and SGC-SG-SGC communications.

Detailed Description	Support SG-SGC and SGC-SG-SGC communications.
Solution	Modified the rtset state so that it would update in a SGC-SG-SGC scenario. Modified the packit script to packit isup and tcap parts for SG.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16403 Compiler upgrade for 1.5.0.

Detailed Description	Compiler upgrade for 1.5.0.
Solution	Upgraded the complier using different flags. Linked it to past libraries.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None

CRSnn16404 Support x86 platform for SG/SGC 1.5.0

Detailed Description	Support x86 platform for SG/SGC 1.5.0
Solution	Compiled the SG/SGC on x86 platform to get x86 SG/SGC 1.5.0 package.
Programming Impacts	None
Operational Impacts	None
Documentation Impacts	None
MML Help Text Impact	None
MO and DB File Impact	None