

## **UK Interconnect use of M3UA**

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NICC Standards Limited

Michael Faraday House,  
Six Hills Way,  
Stevenage  
SG1 2AY

Tel.: +44(0) 20 7036 3636

Registered in England and Wales under number 6613589

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The Technical Secretary, NICC Standards Ltd.,

Michael Faraday House,  
Six Hills Way,  
Stevenage  
SG1 2AY

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## Foreword

This NICC Document (ND) has been produced by NICC Applications Protocols Working Group.

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## Introduction

This document shall define the MTP3 User Adaptation Layer (M3UA) requirements for UK interconnect. It is primarily intended for use in Orange release and beyond but may be used for Green and Purple release.

Note: In this first issue of this document there is no intention to change the technical requirements between Orange, Green and Purple release, however the latest RFCs will be mandated and as a consequence there may be, as yet unidentified, backward compatibility issues.

The information is intended for use by designers of signalling applications that require use of signalling transport protocols, as well as for use by network operators needing to engineer signalling transport networks and to configure signalling applications for UK national network interconnect.

This document will be revised as necessary and in accordance with the NICC workplan to include information appropriate to enhancements to the relevant signalling protocols.

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# 1 Scope

The present document specifies the requirements of the MTP3 User Adaptation Layer (M3UA) when required to support upper layer SS7 protocols for packet-based PSTN/ISDN services. This specification is appropriate for interconnect within the UK Network only for 'signalling gateway' to 'end-node' configuration.

The protocol underlying the adaptation layer for transport of SS7 signalling information **SHALL** be SCTP and for UK interconnect this is defined in ND1028 [2].

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## 2 References

For the particular version of a document applicable to this release see [ND1610](#) [1].

### 2.1 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ND1610 Next Generation Networks; Release Definition
- [2] ND1028 UK Interconnect use of SCTP
- [3] RFC4666 Signalling System 7 (SS7) Message Transfer Part 3 (MTP3) User Adaptation Layer (M3UA)
- [4] ND1005 C7 Interconnect Message Transfer Part (MTP)
- [5] ITU-T Q.704 Specifications of Signalling System No.7 - Message Transfer Part Signalling Network Functions and Messages
- [6] ITU-T Q.706 Specifications of Signalling System No.7 - Message Transfer Part Signalling Performance
- [7] ITU-T Q.716 Specifications of Signalling System No.7 - Signalling Connection Control Part (SCCP Performance)
- [8] ITU-T Q.766 Specifications of Signalling System No.7 - ISDN User Part Performance Objectives in the Integrated Services Digital Network Application

### 2.2 Informative references

- [i.1] ETSI TS 102 142 Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN; M3UA
  - [i.2] ND1107 UK Interconnect use of SCCP and MTP
  - [i.3] ND1017 Interworking between Session Initiation Protocol (SIP) and ISDN User Part (UK ISUP)
- 

## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

Key words: The key words ‘**SHALL**’, ‘**SHALL NOT**’, ‘**MUST**’, ‘**MUST NOT**’, ‘**SHOULD**’, ‘**SHOULD NOT**’, ‘**MAY**’, ‘**NEED NOT**’, ‘**CAN**’ and ‘**CANNOT**’ in this document are to be interpreted as defined in the ETSI Drafting Rules.

Any functionality outlined in RFC4666 [3] as ‘**SHOULD**’ and ‘**MUST**’ is to be considered as mandatory (**SHALL**). Any behaviour outlined as ‘**SHOULD NOT**’ and ‘**MUST NOT**’ is to be read as ‘**SHALL NOT**’.

Not Required: The ETSI specifications TS 102 142 [i.1] use the term ‘**NOT REQUIRED**’. For UK Interconnect use of this term is defined as follows:

It is not necessary for either the underlying functionality or signalling procedures associated with the service/feature to be supported by the implementation concerned for that implementation to qualify as conformant to the specification.

Note 1: Interconnected or communicating implementations that provide support of the service/feature/message/parameter identified will not be considered as non-conformant to the specification.

Note 2: Implementations shall not rely on ‘**NOT REQUIRED**’ features being disabled (or enabled).

Note 3: The normal compatibility rules shall apply to the messages, parameters and codepoints needed to support the feature/service.

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

N/A

## 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ACK	Acknowledgement
AP	Application
AS	Application Server
ASCII	American Standard Code for Information Interchange
ASP	AS Process
ASPTM	ASP Traffic Maintenance (message)
BEAT	Heartbeat (message)
BICC	Bearer Independent Call Control
CP	Communications Provider
DATA	Payload Data (SCTP chunk)
DAUD	Destination state Audit (message)
DAVA	Destination Available (message)
DPC	Destination Point Code
DRST	Destination Restricted (message)
DUNA	Destination Unavailable (message)
DUPU	Destination User Part Unavailable (message)
ECN	Explicit Congestion Notification
ETSI	European Telecommunications Standards Institute
IANA	Internet Assigned Numbers Authority
IETF	Internet Engineering Task Force
INIT	Initiation (SCTP chunk)
INIT-ACK	Initiation Acknowledgement (SCTP chunk)
IP	Internet Protocol
IPsec	IP Security protocol
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
ISC	Interconnect Standards Committee (replaced by TSG WP)
ISDN	Integrated Services Digital Network

IPSP	IP Signalling Point
ISUP	Integrated Services User Part
ITU-T	International Telecommunications Union - Telecommunications Standardization Sector
M2PA	MTP2 User Peer-to-Peer Adaptation Layer
M3UA	MTP3 User Adaptation Layer
MTP	Message Transfer Part of ITU-T Signalling System Number 7
MSU	Message Signalling Unit
MTP2	MTP Level 2 protocol (Signalling Link)
MTP3	MTP Level 3 Protocol (Signalling Network)
MTU	Maximum Transmission Unit
NGN	Next Generation Network
NICC	Network Interoperability Consultative Committee
NTP	Network Termination Point
PLMN	Public Land Mobile Network
PNO-IG	Public Network Operators' – Interest Group (replaced by TSG)
PNO-ISC	Public Network Operators' – Interconnect Standards Committee (replaced by TSG)
PSTN	Public Switched Telephone Network
QoS	Quality of Service
RFC	Request for Comments
RTO	Retransmission Time-out
SACK	Selective Acknowledgement (SCTP chunk)
SCCP	Signalling Connection Control Part
SCON	Signalling Congestion (message)
SCTP	Stream Control Transmission Protocol
SDP	Session Description Protocol
SEP	Signalling End Point
SG	Signalling Gateway
SGP	SG Process
SIP	Session Initiation Protocol
SIP-I	Session Initiation Protocol with encapsulated ISUP
SMS	Short Message Service
SPAN	Services and Protocols for Advanced Networks
SPMC	Signalling Point Management Cluster
SS7	Signalling System Number 7
SSCOP	Service Specific Connection Oriented Protocol
STP	Signalling Transfer Point
TCP	Transmission Control Protocol
TDM	Time Division Multiplexing
TFC	Transfer controlled (message)
TLS	Transport Layer Security
TSG	Technical Steering Group
UK	United Kingdom of Great Britain and Northern Ireland
VLC	Voice Line Control
WG	Working Group

Not all abbreviations will be used in this document.

## 4 Use of M3UA (normative):

The M3UA procedures **SHALL** be as defined in RFC 4446 [3] augmented by ITU-T Recommendation Q.704 [5] as modified by ND1005 [4], except where otherwise defined below.

### 4.1 Endorsement Notice

RFC4666 [3] is hereby endorsed subject to the exceptions in the present clause.

### 4.2 Exceptions to RFC4666 [3]

RFC4666 Clause	Title	Change
General		Throughout RFC4666 [3] references to 'the relevant MTP3 standard' <b>SHALL</b> be replaced with 'ND1005 [4]'.
1.3.1	<b>Protocol Architecture</b>	<p>Replace the 3<sup>rd</sup> paragraph with the following:</p> <p>"M3UA <b>SHALL</b> use the services of the Stream Control Transmission Protocol (SCTP), defined by ND1028 [2], as the underlying reliable common signalling transport protocol. This is to take advantage of various SCTP features, such as:"</p> <p>Replace the 4<sup>th</sup> paragraph with the following:</p> <p>"TCP <b>SHALL NOT</b> be used as the underlying common transport protocol for M3UA."</p>
1.3.2.1	<b>Support for the Transport of MTP3-User Messages</b>	<p>Insert the following paragraph after the 2<sup>nd</sup> paragraph:</p> <p>"Assuming that:</p> <ul style="list-style-type: none"> <li>• all associations have an equal end-to-end bandwidth and latency for all paths;</li> <li>• equal processing capacity is provided across all ASPs;</li> </ul> <p>then M3UA <b>SHOULD</b> use an algorithm that produces an even distribution for transmitting message across associations. Any variance from the above assumptions needs to be negotiated."</p> <p>Modify the 3<sup>rd</sup> paragraph as follows:</p> <p>"The M3UA layer does not impose a 272-octet signalling information field (SIF) length limit as specified by the SS7 MTP Level 2 protocol [7,8,9]. Larger information blocks can be accommodated directly by M3UA/SCTP, without the need for an upper layer segmentation/ re-assembly procedure as specified in recent SCCP or ISUP versions. However, in the context of an SG, the maximum 272-octet block size <del>must</del> <b>SHALL</b> be followed when interworking to a SS7 network that does not support the transfer of larger information blocks to the final destination. This avoids potential ISUP or SCCP fragmentation requirements at the SGPs. The provisioning and configuration of the SS7 network determines the restriction placed on the maximum block size. Some configurations (e.g., Broadband MTP [19,20,22]) may permit larger block sizes."</p>

RFC4666 Clause	Title	Change
1.3.2.3	<b>Interworking with MTP3 Network Management Functions</b>	<p>Modify the 2<sup>nd</sup> and 3<sup>rd</sup> paragraphs as follows:</p> <p>“The M3UA layer at an ASP keeps the state of the routes to remote SS7 destinations and <del>may</del> <b>SHALL</b> initiate an audit of the availability. <del>and the</del> The restricted or the congested state of remote SS7 destinations <b>SHALL NOT</b> be audited. This information is requested from the M3UA layer at the SGP.</p> <p>The M3UA layer at an ASP <del>may also</del> <b>SHALL</b> be enabled indicate to the SG that the M3UA layer itself or the ASP or the ASP's Host is congested.”</p>
1.4.1	<b>Signalling Point Code Representation</b>	<p>Modify the last sentence of the 2<sup>nd</sup> paragraph as follows:</p> <p>“Alias Point Codes [8] <del>may also be used</del> are <b>NOT REQUIRED</b> within an SG network appearance.”</p> <p>Replace the 4<sup>th</sup> paragraph with the following:</p> <p>“M3UA <b>SHALL NOT</b> allow a single point code to represent both the Signalling Gateway and an Application Server.”</p> <p>Add the following sentence below Figure 1:</p> <p>“Signalling links between mated SGs are outside the scope of this specification.”</p>
1.4.2.3	<b>Managing Routing Contexts and Routing Keys</b>	<p>Modify the 1<sup>st</sup> paragraph as follows:</p> <p><del>“There are two ways to provision a Routing Key at an SGP. A Routing Key may SHALL be configured statically using an implementation dependent management interface, or dynamically using the M3UA Routing Key registration procedure.”</del></p> <p>Insert the following paragraph after the 1<sup>st</sup> paragraph:</p> <p>“Dynamic registration of Routing Keys <b>SHALL NOT</b> be used for configuration management. The configuration of the system <b>SHALL</b> be modified only by the management system, and not by the protocol itself. Further reference to ‘Dynamic registration’ within the RFC <b>SHALL</b> be ignored.”</p>
1.4.2.4	<b>Message Distribution at the SGP</b>	<p>Insert the following sentence to the end of the 2<sup>nd</sup> paragraph:</p> <p>“The key to enable messages to be distributed to the appropriate AS <b>SHALL</b> have a granularity no smaller than is allowed by the network management messages appropriate to that layer.”</p> <p>Insert the following paragraphs to the end of the clause:</p> <p>“The behaviour if no active ASP is available is a nodal function. The default treatment if no matching routing key entry is found for incoming SS7 message is implementation dependent, but layer management <b>SHALL</b> be informed if the received message is discarded.</p> <p>The duration of buffering, if used, <b>SHOULD</b> be minimised because it may cause excessive signalling delay.”</p>
1.4.3.3	<b>Application Server</b>	<p>Insert the following sentence to the end of the 1<sup>st</sup> paragraph:</p> <p>“The Routing Key to enable messages to be distributed to the appropriate AS <b>SHALL</b> have a granularity no smaller than Point Code.”</p>

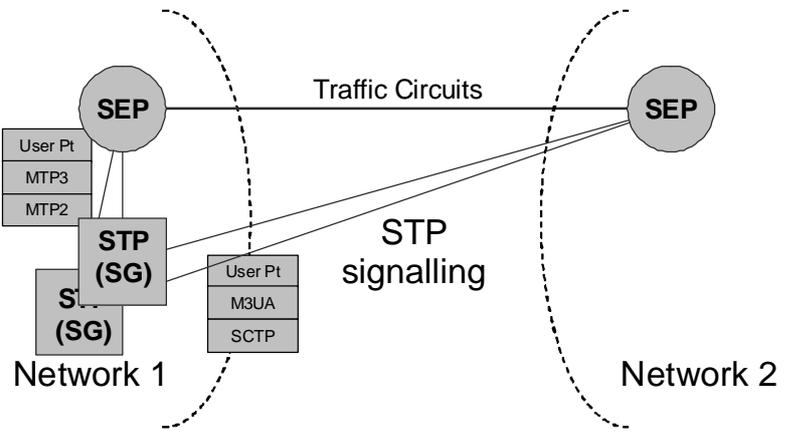
RFC4666 Clause	Title	Change
1.4.6	<b>Congestion Management</b>	<p>Modify the 1<sup>st</sup> paragraph as follows:</p> <p>“The M3UA layer <del>is</del> <b>SHALL</b> be informed of local and IP network congestion by means of an implementation-dependent function (e.g., an implementation-dependent indication from the SCTP of IP network congestion).”</p> <p>Replace the 3<sup>rd</sup> and 4<sup>th</sup> paragraphs as follows:</p> <p>“When an SG determines that the transport of SS7 messages to a Signalling Point Management Cluster (SPMC) is encountering IP network congestion, the SG <b>SHALL</b> trigger SS7 MTP3 Transfer Controlled management messages to originating SS7 nodes, per the congestion procedures of Q.704 [5] and ND1005 [4]. The triggering of SS7 MTP3 Management messages from an SG is an implementation-dependent function.</p> <p>The M3UA layer at an ASP <b>SHALL</b> indicate local congestion to an M3UA peer via an implementation dependent method. For example the M3UA layer at an ASP or IPSP <b>MAY</b> indicate local congestion to an M3UA peer with an SCON message. When an SG receives a congestion message (SCON) from an ASP and the SG determines that an SPMC is now encountering congestion, it <b>SHALL</b> trigger SS7 MTP3 Transfer Controlled management messages to concerned SS7 destinations according to congestion procedures of ND1005 [4]. The receiving node <b>SHALL</b> be able to detect local congestion and inform the transmitting node of this, by whatever means.”</p>
1.4.7	<b>SCTP Stream Mapping</b>	<p>Replace the 2<sup>nd</sup> sentence in the 1<sup>st</sup> paragraph as follows:</p> <p>“SCTP stream mapping is implementation dependent, but any MSUs requiring sequenced delivery with respect to each other, <b>SHALL</b> be sent over the same stream.”</p>
1.4.8	<b>Client/Server Model</b>	<p>Replace the 1<sup>st</sup> sentence of the 1<sup>st</sup> paragraph as follows:</p> <p>“The SGP <b>SHALL</b> be able to support SCTP server operation and the ASP <b>SHALL</b> be able to support SCTP client operation. Support of both SCTP client and SCTP server operation at the ASP or SGP is optional.”</p>

RFC4666 Clause	Title	Change
3.4.1	<b>Destination Unavailable (DUNA)</b>	<p>Replace the 1<sup>st</sup> paragraph as follows:</p> <p>“The DUNA message is sent from an SGP in an SG to all concerned ASPs to indicate that the SG has determined that one or more SS7 destinations are unreachable. It is also sent by an SGP in response to a message from the ASP to an unreachable SS7 destination. As an implementation option, the SG <b>MAY</b> suppress the sending of subsequent "response" DUNA messages regarding a certain unreachable SS7 destination for a certain T8 period to give the remote side time to react. See Q.704 [5] for T8. If there is no alternate route via another SG, the MTP3-User at the ASP is expected to stop traffic to the affected destination via the SG as per the defined MTP3-User procedures.”</p> <p>Replace the 1<sup>st</sup> sentence of the ‘INFO String: variable length’ paragraph with the following:</p> <p>“The optional INFO String parameter structure <b>SHALL</b> be ASCII text encoded (UK English).”</p> <p>Insert the following sentence at the start of the paragraph titled “Affected Point Code: n x 32 bits”:</p> <p>“For UK Interconnect, only the ITU 14-bit binary formatted SS7 Point codes <b>SHALL</b> be used.”</p> <p>Insert the following sentence at the start of the paragraph titled “Mask: 8 bits (unsigned integer)”:</p> <p>”For UK Interconnect, the Point Code Mask field <b>SHALL</b> be set to 0.”</p>
3.4.3	<b>Destination state Audit (DAUD)</b>	<p>Replace the 1<sup>st</sup> paragraph as follows:</p> <p>“Destination state Audit (DAUD), <b>SHALL</b> be sent from ASP to SGP to audit the availability of SS7 routes from SG to one or more affected destinations. The frequency of the route test messages <b>SHALL</b> be as described for T10. See Q.704 [5] for T10. DAUD <b>SHALL NOT</b> be sent to audit the congestion or restricted state.”</p>
3.4.4	<b>Signalling Congestion (SCON)</b>	<p>Replace the 1<sup>st</sup> paragraph as follows:</p> <p>“The SCON message <b>MAY</b> be sent from an SGP to all concerned ASPs to indicate that an SG has determined that there is congestion in the SS7 network to one or more destinations, or to an ASP in response to a DATA or DAUD message, as appropriate. SCONs <b>MAY</b> also be sent from the M3UA layer on ASP to M3UA peer indicating that the M3UA layer or ASP is congested.</p> <p>The receiving node <b>SHALL</b> be able to detect local congestion and inform the transmitting node of this, by whatever means.</p> <p>The SCON message <b>SHALL NOT</b> be sent when SS7 congestion level changes. Multiple congestion levels <b>SHALL NOT</b> be supported. The national option, without congestion priorities, <b>SHALL</b> be used as per ND1005 [5].</p> <p>The sending of an SCON message <b>SHALL NOT</b> be delayed in order to collect a number of affected DPCs. Multiple affected DPCs <b>MAY</b> be included, as long as this does not delay the sending of the SCON message.”</p>

RFC4666 Clause	Title	Change
3.4.5	<b>Destination User Part Unavailable (DUPU)</b>	Replace the paragraph titled 'MTP3-User Identity field: 16 bits (unsigned integer)' with the following:  "The MTP3-User Identity describes the specific MTP3-User that is unavailable (e.g., ISUP, SCCP, etc.). Some of the valid values for the MTP3-User Identity are shown below. The values here <b>SHALL</b> align with those provided in the SS7 MTP3 User Part Unavailable message and Service Indicator. Depending on the Network Appearance the Service Indicator values required <b>SHALL</b> include those defined by ND1107 [i.2] and ND1017 [i.3]."
3.4.6	<b>Destination Restricted (DRST)</b>	Replace the 1 <sup>st</sup> and 2 <sup>nd</sup> paragraph with the following:  "Destination Restricted (DRST), <b>SHALL NOT</b> be sent. If DRST is received, it <b>SHALL</b> be discarded."
3.5.5	<b>Heartbeat (BEAT)</b>	Replace the 1 <sup>st</sup> sentence of the 1 <sup>st</sup> paragraph with the following:  "The M3UA Heartbeat (BEAT) message <b>SHALL NOT</b> be used."
3.5.6	<b>Heartbeat Acknowledgement (BEAT Ack)</b>	Modify the 1 <sup>st</sup> sentence as follows:  "The BEAT Ack message <del>is</del> <b>SHALL</b> be sent in response to a received BEAT message."
3.6.1	<b>Registration Request</b>	Insert the following paragraph after the paragraph "The Valid values for Traffic Mode are...":  "For UK Interconnect the Traffic Mode Type parameter value 'Broadcast' <b>SHALL NOT</b> be used."
3.8.1	<b>Error</b>	Replace "The "Destination Status Unknown" error MAY be sent....." paragraph with the following:  "For a "Destination Status Unknown" error the Destination Unavailable (DUNA) message <b>SHALL</b> be send. An error message is <b>NOT REQUIRED</b> ."  Insert the following sentence to the 'Diagnostic Information: variable length' paragraph:  "A permitted option is to provide the supported version in the 'Diagnostic Information' parameter of the Error message."
4.1.1	<b>Receipt of Primitives from the M3UA-User</b>	Insert the following sentence to the 5 <sup>th</sup> paragraph:  "If the received message is discarded the layer management <b>SHALL</b> be informed."
4.3.2	<b>AS States</b>	Insert the following paragraph before the paragraph beginning with "Figure 4 shows an example ...":  "If multiple Application Server Processes (ASPs) are used within the AS, the AS <b>SHALL</b> be considered active when the first ASP becomes active, and <b>SHALL</b> remain active until the last ASP becomes inactive".
4.3.4.1	<b>ASP UP Procedures</b>	Insert the following sentence to the 7 <sup>th</sup> paragraph:  "ASPTM messages <b>SHALL</b> only be sent after receipt of ASP Up Ack message."

RFC4666 Clause	Title	Change
4.3.4.3	<b>ASP Active Procedures</b>	<p>Modify the 1<sup>st</sup> sentence in the 1<sup>st</sup> paragraph as follows:</p> <p><del>“Anytime after the</del> Once an ASP has received an ASP Up Ack message from the SGP or IPSP, the ASP <del>MAY</del> <b>SHALL</b> send an ASP Active message to the SGP, indicating that the ASP is ready to start processing traffic.”</p> <p>Insert the following sentence after the 3<sup>rd</sup> sentence in the 1<sup>st</sup> paragraph:</p> <p>“By bi-lateral agreement, an AS <b>MAY</b> consist of more than one ASP.”</p> <p>Insert “, within SCTP limits.” to the end of the last sentence in the 1<sup>st</sup> paragraph.</p> <p>Insert the following sentence to the end of the 2<sup>nd</sup> paragraph:</p> <p>“Where an unexpected ASP Active message is received the message <b>MAY</b> be silently discarded, as long as there is no disruption to traffic.”</p> <p>Modify the 5<sup>th</sup> sentence in the 3<sup>rd</sup> paragraph as follows:</p> <p>“If the SGP or IPSP receives any Data messages (SS7 messages) before an ASP Active message is received, the SGP or IPSP <del>MAY</del> <b>SHALL</b> discard them.”</p> <p>Insert the following sentence after the 5th sentence in the 3rd paragraph:</p> <p>“M3UA Transfer and SSNM messages <b>SHALL</b> only be sent by an ASP after receipt of ASP Active Ack message.”</p> <p>Modify the last sentence in the 9<sup>th</sup> paragraph as follows:</p> <p>“If the traffic handling mode of the Application Server is not already known via configuration data, then the traffic handling mode indicated in the first ASP Active message causing the transition of the Application Server state to AS-ACTIVE <del>MAY</del> <b>SHALL</b> be used to set the mode.”</p>
4.3.4.4	<b>ASP Inactive Procedures</b>	<p>Replace the 2<sup>nd</sup> sentence in the 6<sup>th</sup> paragraph as follows:</p> <p>“When an ASP inactive results in (“insufficient ASP resources active in AS”), a Notify message <b>SHALL</b> be sent to all inactive ASPs.”</p> <p>Add “within SCTP limits,” to the 8<sup>th</sup> paragraph, 1<sup>st</sup> sentence, after the 1<sup>st</sup> comma.</p>
4.5.1	<b>At an SGP</b>	<p>Replace the last paragraph with the following;</p> <p>“DUPU and DAUD messages <b>SHALL NOT</b> be sent unsequenced.”</p>

RFC4666 Clause	Title	Change
4.5.3	<b>ASP Auditing</b>	<p>Replace the 1<sup>st</sup> sentence of the 1<sup>st</sup> paragraph with the following:</p> <p>“An ASP <b>SHALL</b> initiate an audit procedure to enquire of an SGP the availability of SS7 destination(s) every T10 s after a DPC becomes unavailable. It <b>SHALL NOT</b> initiate an audit procedure for congested or restricted status of SS7 destination(s).”</p> <p>Replace the 1<sup>st</sup> sentence of the 2<sup>nd</sup> paragraph with the following:</p> <p>“A DAUD message <b>SHALL NOT</b> be sent unsequenced and <b>SHALL</b> be sent periodic (via T10) or in case of isolation (ASP newly active/inactive).”</p> <p>Replace the 5<sup>th</sup> paragraph with the following:</p> <p>“A DUNA or DAVA in response to a DAUD <b>SHALL</b> contain 1 or a list of affected point codes. The maximum number of affected DPCs that can be included <b>SHALL</b> be in line with the SCTP limits.”</p> <p>Replace the 1<sup>st</sup> sentence of the 6<sup>nd</sup> paragraph with the following:</p> <p>“A SG <b>MAY</b> discard the received request, or it <b>MAY</b> respond with a DUNA, if the ASP is not authorized to receive availability information of the concerned PC(s).”</p>
4.6	<b>MTP3 Restart</b>	<p>Replace the 1<sup>st</sup> sentence of the 5<sup>th</sup> paragraph with the following:</p> <p>“The ASP <b>SHALL</b> audit the availability of unavailable destinations by sending DAUD messages.”</p>
6	<b>Security Considerations</b>	<p>Replace the clause with the following:</p> <p>“Security is out of scope of the present document.”</p>
7.1	<b>SCTP Payload Protocol Identifier</b>	<p>Insert the following sentence to the end of the 2<sup>nd</sup> paragraph:</p> <p>“If an unrecognizable payload protocol ID (i.e. neither 0 nor 3) is received, the message <b>SHALL</b> be silently discarded.”</p>
A.1	<b>Signalling Network Architecture</b>	<p>Insert the following paragraph to the start of the subclause:</p> <p>“Performance requirements are outside the scope of this document. However, the network implementation <b>SHOULD</b> take into account the performance requirements as outlined in Q.706 [6], Q.716 [7] and Q.766 [8].”</p>

RFC4666 Clause	Title	Change
A.1.1 (new)	<p><b>SIGTRAN Network architecture supported by UK Interconnect standards</b></p>	<p>Insert the following paragraphs and diagram in a new subclause in Appendix A:</p> <p>“The configurations supported by the current UK interconnect standards for M3UA client-server model is shown in figure A-2.</p>  <p><b>Figure A-2 – Quasi-Associated Signalling - STP one side</b></p> <p>This asymmetrical network architecture arises if Network 1 provides a signalling gateway or some signalling gateways as a service for Network 2. The means of interconnect is the M3UA in client-server mode.”</p>
A.3 (new)	<p><b>Nodal Congestion Control</b></p>	<p>Insert the following paragraphs in a new subclause in Appendix A:</p> <p>“There is a greater risk of nodal overload with IP-based signalling transport, because the available bandwidth between a pair of nodes is no longer constrained to 64kbit/s. Therefore the importance of effective nodal congestion controls is even greater than for SS7 signalling transport. The following clauses give guidance on the signalling protocol options by which a node might notify other nodes that it is (at risk of) being overloaded by the presented signalling load.</p> <p>For the network configuration shown in clause A-1.1 figure A-2, the important elements are:</p> <ul style="list-style-type: none"> <li>• The SGP and ASP are aware of their local nodal load, such an implementation-dependent means can either make them send SCON messages or cause a reduction in the credit window of their underlying SCTP association;</li> <li>• The ASP informs the User Parts using the MTP-STATUS_Indication, if either it receives SCON messages or an implementation-dependent mechanism indicates excessive occupancy of the underlying SCTP association;</li> <li>• The User Part has an effective method of reducing its outgoing signalling traffic (this requirement is the same as for SS7 signalling transport);</li> </ul> <p>The SGP either sends TFC messages concerning the AS's own pointcode or causes a reduction of the rate at which its underlying MTP Level 2 acknowledges incoming MSUs, if either it receives SCON messages or an implementation-dependent mechanism indicates excessive occupancy of the underlying SCTP association.”</p>

End of Clause 5

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## History

<b>Document history</b>		
V1.1.1	March 2011	NICC/TSG approved

End of Document