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Storitve in protokoli za napredna omrežja (SPAN) – MTP/SCCP/SSCOP in SIGTRAN (prenos SS7 preko IP) – Uporabniška prilagodilna plast (SUA) krmilnega dela signalizacijske zveze [privzeti SIGTRAN–SUA–14 (december 2002), spremenjen]

Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN (Transport of SS7 over IP); Signalling connection control part User Adaptation layer (SUA) [Endorsement of SIGTRAN-SUA-14 (December 2002), modified]

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Technical Specification

Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN (Transport of SS7 over IP); Signalling connection control part User Adaptation layer (SUA)

[Endorsement of SIGTRAN-SUA-14 (December 2002), modified]

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

Endorsement notice

The elements of Internet Engineering Task Force Internet Draft draft-ietf-sigtran-sua-14 [3], apply with the following modifications.

Introduction

The present document records the changes to the Internet Engineering Task Force (IETF) draft SUA document. IETF drafts are transient documents, eventually the SUA draft is expected to be replaced with an RFC, which will persist on the IETF website. However, ETSI will keep a copy of the IETF draft on its website until the present document is replaced. See [3] below for more information.

1 Scope

The present document is applicable to the international network and does not intend to restrict national networks. However to facilitate interworking, its adoption within national networks is preferred.

The present document specifies the Signalling Connection Control Part (SCCP) User Adaptation layer signalling protocol for connecting SCCP Users via Signalling System No. 7 SCCP international relay points and signalling gateways to SCCP Users in an Internet Protocol (IP) managed network.

The present document endorses and constrains where relevant the SIGTRAN SUA of [3].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

[1] ETSI EN 300 009-1: "Signalling Connection Control part (SCCP) (connectionless and connection-oriented) to support international interconnection".

[2] ETSI EN 300 008-1: "Integrated Services Digital Network (ISDN); Signalling System No.7; Message Transfer Part (MTP) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.701, Q.702, Q.703, Q.704, Q.705, Q.706, Q.707 and Q.708 modified] ".

[3] IETF Internet Draft draft-ietf-sigtran-sua-14: "Signalling Connection Control Part User Adaptation Layer (SUA)".

NOTE: At http://www.ietf.org/internet-drafts/draft-ietf-sigtran-sua-14.txt.

[4] ITU-T Recommendation Q.714: "Specifications of Signalling System No. 7, Signalling connection control part procedures".

[5] ETSI EG 201 693: "Integrated Services Digital Network (ISDN); Signalling System No.7; Master list of codepoints".

[6] ITU-T Recommendation Q.704: "Specifications of Signalling System No. 7, Message Transfer Part, Signalling network functions and messages".

[7] ITU-T Recommendation Q.711: "Signalling System No.7 - Functional Description of the Signalling Connection Control Part".

[8] ITU-T Recommendation Q.713: "Signalling connection control part formats and codes".

[9] ITU-T Recommendation Q.774: "Transaction capabilities procedures".

[10] ETSI TS 102 144: "Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN; SCTP".

[11] ETSI TS 102 141: "Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN (Transport of SS7 over IP); Message transfer part 2 User Adaptation layer (M2UA) [Endorsement of RFC 3331 (2002), modified]".

[12] ETSI TS 102 142: "Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN (Messag of SS7 over IP); Message transfer part 3 User Adaptation layer (M3UA) [Endorsement of RFC 3332 (2002), modified]".

[13] IETF RFC 3332 (2002): "Signaling System 7 (SS7) Message Transfer Part 3 (MTP3) - User Adaptation Layer (M3UA)", G. Sidebottom, K. Morneault, J. Pastor-Balbas.

[14] IETF RFC 2119: "Key words for use in RFCs to Indicate Requirement Levels".

3 Abbreviations

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

ACTIVE	ASP ACTIVE
AS	Application Server
ASP	AS Process
ASPSM	Application Server Process State Maintenance
BEAT	heartBEAT
BEAT ACK	heartBEAT ACK
CLDR	ConnectionLess Data Response
CLDT	ConnectionLess Data Transfer
COAK	COnnection AcKnowledge
CODA	Connection Oriented Data Acknowledge
CODT	Connection Oriented Data Transfer
COIT	Connection Oriented Inactivity Test
CORE	COnnection REquest
DAUD	Destination state AUDit
DAVA	Destination AVAilable
DRST	Destination ReSTricted
DUNA	Destination UNAvailable
DUPU	Destination User Part Unavailable
ERR	ERroR
IANA	Internet Assigned Numbers Authority
IETF	Internet Engineering Task Force
IP	Internet Protocol
RESCO	RESet COnfirm
RESRE	RESet REquest
RFC	Request For Comment (IETF standard)
RIL	Restricted Importance Level
RKM	Routing Key Management
SCCP	Signalling Connection Control Part
SG	Signalling Gateway
SGP	SG Process
SS7	Signalling System Number 7
SSC	SCCP/Subsystem Congested
SSN	SubSystem Number
SUA	SCCP User Adaptation layer

4 General considerations applicable to transport of Signalling System No. 7 over IP

The elements of SIGTRAN adaptation layers apply with the following exceptions and restrictions. The considerations in this clause are common to TS 102 141 [11], TS 102 142 [12] and the present document.

4.1 Transport protocol

The protocol underlying the adaptation layer for transport of SS No.7 signalling information in IP networks shall be SCTP.

4.2 SCTP considerations

The SCTP used shall conform to TS 102 144 [10].

The SCTP payload protocol identifier for messages pertaining to an adaptation layer shall be the one assigned by IANA for that layer. Adaptation layer messages received with neither the IANA payload protocol identifier nor payload protocol identifier equal to 0 shall be silently discarded.

Unordered user messages shall not be used.

4.3 National options

No national options excluded by ETSI standards shall apply to the present document.

4.4 Application Server mode

The Broadcast mode shall not be used.

4.5 Application Server state handling

If multiple Application Server Processes (ASPs) are used within the AS, the AS shall be considered active when the first ASP becomes active, and shall remain active until the last ASP becomes inactive.

4.6 Dynamic registration

Dynamic registration shall not be used for configuration management. The configuration of the system shall be modified only by the management system, and not by the protocol itself.

4.7 Message distribution to the Application Server

The key to enable messages to be distributed to the appropriate AS shall have a granularity no smaller than is allowed by the network management messages appropriate to that layer.

4.8 Receipt of unrecognized messages

If a message with an unrecognized message class is received, a Management Error message shall be returned with Error Code "Unsupported Message Class".

5 General considerations applicable to SUA

5.1 National options

No national options excluded by EN 300 009-1 [1] and EN 300 008-1 [2] shall apply to the present document.

5.2 Dynamic registration

Dynamic registration of Routing Keys shall not be used for configuration management. The configuration of the system shall be modified only by the management system, and not by the protocol itself.

5.3 Message distribution to the Application Server

The Routing Key to enable messages to be distributed to the appropriate AS shall have a granularity no smaller than Point Code + SSN.

5.4 SUA procedures

The SUA procedures shall be as defined in [3] augmented by ITU-T Recommendation Q.714 [4] as modified by EN 300 009-1 [1], except where otherwise defined below.

5.5 Class 3 operation

Class 3 operation is not in the scope of the present document.

5.6 N-PCSTATE primitive

The N-PCSTATE primitive's signalling point status parameter (see ITU-T Recommendation Q.711 [7] clause 6.3.2.2.5) has in [3] been extended to convey information about the restricted status of the signalling point. However, this shall not be used.

6 Modifications to SUA-14

Modificiations to [3] are listed according to the section or subsection of [3].

Section 1 Introduction

ANSI references do not apply. Add a reference "[ITU SCCP]".

NOTE: SCCP user **messages** are transported between two signalling endpoints.

Subsection 1.2 Terminology

Routing Key: Dynamic registration of Routing Keys shall not be used for configuration management. The configuration of the system shall be modified only by the management system, and not by the protocol itself.

Add the definition of Network Appearance taken from RFC 3332 [13] (which has been extended for SUA) viz:

- "Network Appearance - The Network Appearance is an SUA local reference (typically an integer) shared by SG and AS that together with a Signalling Point Code or global title uniquely identifies an SS7 node by indicating the specific SS7 network it belongs to".

Subsection 1.3.1 Protocol Architecture for Connectionless Transport

NOTE: The entity labelled "SEP or STP" is just an SEP here since it contains an SCCP User.

Subsection 1.3.1.1

NOTE: The SG can act as an endpoint with messages routed to it also by global title, if the global title translation there yields the point code of the SG itself.

Subsection 1.3.1.2 SG as relay-point

NOTE: Global Title Translation yields an "entity set", not an "entity". A way of viewing the AS is then as an "entity set", with each ASP that the AS uses viewed as an "entity" within the set.

Subsection 1.3.2 Protocol Architecture for Connection-Oriented Transport

Replace the first two sentences by:

"In this architecture, the SCCP and SUA layers in the SGP interface to support connection-oriented data transfer between SEP and ASP. Connection sections are setup when routing the Connect Request messages from SEP via SGP to ASP or the other way".

NOTE: The entity labelled "SEP or STP" is just an SEP here since it contains an SCCP User.

Subsection 1.4.2 SCCP Protocol Class Support

Protocol class 3 is not in the scope of the present document.

Subsection 1.4.4 Interworking with SCCP Network Management Functions

ANSI references do not apply.

- N-STATE is defined in ITU-T Recommendation Q.711 [7], clause 6.3.2.3.2, table 16/Q.711.
- N-PCSTATE is defined in ITU-T Recommendation Q.711 [7], clause 6.3.2.3.3, table 17/Q.711.
- N-COORD is defined in ITU-T Recommendation Q.711 [7], clause 6.3.2.3.1, table 15/Q.711.

Subsection 1.4.5 Support for the management between the SGP and ASP.

The SUA shall also provide interworking with SCCP management functions at the SG to inform concerned SCCP users in the SS No.7 network about the availability, accessibility and congestion status of SUA/SUA users in the managed IP network.

Subsection 1.5 Internal Functions Provided in the SUA Layer

Transaction ID shall not be used for Routing Key Information.

Dynamic registration shall not be used to provision Routing Key information.

Subsection 1.5.1 Address Mapping at the SG

Replace occurrences of "t (r)""by "T(r)".

If messages are discarded when there is no address match, a report shall be made to Layer Management.

Subsection 1.5.3 Address Mapping Function at a Relay Node

It is preferable to route messages to the SG on Global Title within the SS No.7 network, rather than on SSN (+ PC), if the relay function is to be invoked at the SG (with the SG's incoming SCCP itself performing a Global Title Translation). This helps the SG to avoid performing multi-point code working at its MTP level.

If the relay function is to be invoked for messages from the IP network directly to the SS No.7 network, resolution of the address information shall yield the information required in ITU-T Recommendation Q.714 [4], clause 2.2.2.

Subsection 1.5.4 SCTP Stream Mapping

A set of signalling messages requiring to be delivered in the same sequence as they are sent shall use the same SCTP stream.

Sequenced delivery shall be used for SUA management messages.

Protocol class 3 is not in the scope of the present document.