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Media interconnect interface for SIP/SIP-I

0 DOCUMENT HISTORY

Revision	Date	Amendments
1.0	2013-12-16	New document
2.0	2014-03-24	New version after review/Hans Ahlsmo
3.0	2015-03-05	Change of 64kbps Unrestricted service/Hans Ahlsmo
4.0	2017-03-16	64kbps Unrestricted service now also available for SIP. TeliaSonera changed to Telia Operator Business./Hans Ahlsmo&Stefan Tjernell
5.0	2018-10-23	TeliaSonera logo changed to Telia Wholesale. Chapter 4.3&4.4 is created with different media profiles. Old Ch.4.5 removed. /Hans Ahlsmo&Stefan Tjernell

1 SCOPE

This specification is to be used between a national fixed or mobile operator in Sweden using SIP/IP or SIP-I/IP interconnects towards Telia fixed network (PSTN). Both originating/terminating and transit call scenarios are supported based on ref. [3, 4 and 5]. The signalling and media information is transported using IP network.

The requirements are defined using following principles/meaning:

- (M) Mandatory requirement
- (R) Nice to have requirement
- (O) Optional requirement

2 REFERENCES

Documents referred to in this specification are listed below:

[1] ITU-T Q.1912.5	Interworking between Session Initiation Protocol (SIP) and Bearer Independent Call Control protocol or ISDN User Part
[2] Mandatory and recommended IETF RFCs	RFC 2474: (M) Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers (updated by 3168 and 3260) RFC 2475: (M) An Architecture for Differentiated Services (updated by 3260) RFC 2598: (M) Expedited Forwarding PHB RFC 2833: (O) RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals RFC 4733: (O) RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals (obsolete 2833) RFC 3550: (M) "RTP: A Transport Protocol for Real-Time Applications". (obsolete 1889) RFC 3551: (M) "RTP Profile for Audio and Video Conferences with Minimal Control". (obsolete 1890)

	RFC 4566: (M) "SDP: Session Description Protocol" (obsolete 2327,3266)
[3]	8211-A355 IP interconnect interface for SIP/SIP-I
[4]	8211-A353 SIP-I signalling interface for Sweden
[5]	8211-A356 Address formats for Swedish national SIP/SIP-I interconnection
[6]	8211-A357 SIP signalling interface for Sweden

3 DEFINITIONS/ACRONYMS

CNG	Comfort Noise Generation
DTMF	Dual-Tone Multi-Frequency
DSCP	Differentiated Services Control Points
IPP	IP Precedence bits
PCMA	Pulse Code Modulation A-law
PLC	Packet Loss Concealment
PT	Payload Type
PTIME	Packetisation Time
RTCP	Real-Time Control Protocol
RTP	Real-Time Protocol
SID	Silence Suppression
SIP	Session Initiation Protocol
SIP-I	Session Initiation Protocol with encapsulated ISUP
UDP	User Datagram Protocol

4 MEDIA REQUIREMENTS

The media requirements are based on RTP/UDP/IP for transport of voice, fax and data.

4.1 RTP/UDP/IP transport

The RTP protocol shall be based on mandatory related RFCs (see [2]).	REQ 01

The UDP protocol shall be based on RFC 768.	REQ 02

The IP protocol is based on IPv4 RFC 791.	REQ 03

4.2 Codec

The following codec requirements shall apply:

Supported codec is ITU-T G.711 A-law (PT=8, PCMA).	REQ 04

4.3 Standard Media profile

The following media requirements shall apply:

The recommended packet size (ptime) shall be 10ms.	REQ 05
Comfort Noise/Silence Suppression function not used.	REQ 06
T.38 fax relay function not used.	REQ 07
PLC function not used.	REQ 08
Static jitter buffer set to 10ms.	REQ 09
Adaptive jitter buffer not used.	REQ 10
DTMF (PT=8, PCMA) tones will be sent in-band (DTMF relay function not used).	REQ 11
G3 fax (PT=8, PCMA) will be sent in-band.	REQ 12
G4 fax or data (PT=96) will be sent in-band and will use the 64 kbit/s clear channel service (now valid both for SIP-I and SIP signalling).	REQ 13

4.4 Optional Media Profile

The optional Media Profile can be used first after agreement with Telia.
The following media requirements shall apply:

The recommended packet size (ptime) shall be 20ms.	REQ 14
Comfort Noise/Silence Suppression function not used.	REQ 15
T.38 fax relay function not used.	REQ 16
PLC function used. (*)	REQ 17
Static jitter buffer not used.	REQ 18
Adaptive jitter buffer used. (*)	REQ 19
DTMF (PT=98) tones will be sent out-band (DTMF relay function used).	REQ 20
G3 fax (PT=8, PCMA) will be sent in-band.	REQ 21
G4 fax or data (PT=96) will be sent in-band and will use the 64 kbit/s clear channel service (now valid both for SIP-I and SIP signalling).	REQ 22

(*) The PLC function and Adaptive jitter buffer is not used in traffic cases where the incoming media profile is equal to the outgoing media profile (no transcoding is necessary).

4.5 UDP port number range

The following UDP port number range shall apply for media transport:

Telia Outgoing Port number range 10000 – 65534. Telia Incoming Port number range – no restriction.	REQ 23
Only even UDP port numbers are used.	REQ 24

4.6 RTCP support

Because of inconsistencies we recommend using an IP network with very low packet loss, low delay and low jitter instead.

The following support for RTCP shall apply:

RTCP function not used (generation, termination, forwarding).	REQ 25

4.7 QoS support

The RTP packet shall be transported using a traffic class with low delay and high priority:

Diffserv class Expedited Forwarding (EF) according to [2] shall be used.	REQ 26
DSCP value shall be 46 and IPP value shall be 5. (If other DSCP/IPP values are used internally mapping to these values are needed.)	REQ 27

4.8 Echo cancellation

Echo cancellation is normally applied in networks using analogue 2-wire/4-wire transitions.
Echo cancellation is not a problem in the IP network but may cause echo in the analogue part due to introducing high delay in the IP network.

Echo canceller shall be used where it is necessary and as close as possible to the echo source.	REQ 28

5 INFLUENCED NODE TYPES AND EQUIPMENT

The equipment affected is Telia fixed transit network nodes and Operator X network nodes.