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# **Finnish profile for SIP tariff interworking Annex 1 - applying the SIP tariff**

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## 1 Terminology and definitions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC 2119].

SIP	Session Initiation Protocol
XML	eXtensible Markup Language
CDP	Charge Determination Point
CGP	Charge Generation Point
SIP	Session Initiation Protocol
ISUP	ISDN User Part
CRGT	ChaRGe Tariff information
AOCRG	Add-On ChaRGe information
CRG	ISUP ChaRGe message
MPM	ISUP Metering Pulse Message
CDR	Call Data Record

## 2 References

[RFC 2119] Key words for use in RFCs to Indicate Requirement Levels, <https://datatracker.ietf.org/doc/rfc2119/>

[RFC 3261] SIP: Session Initiation Protocol, <https://datatracker.ietf.org/doc/rfc3261/>

[RFC 4028] Session Timers in the Session Initiation Protocol (SIP), <https://datatracker.ietf.org/doc/rfc4028/>

[RFC 6086] Session Initiation Protocol (SIP) INFO Method and Package Framework, <https://datatracker.ietf.org/doc/rfc6086/>

[RFC 3023] XML Media Types, <https://datatracker.ietf.org/doc/rfc3023/>

[3GPP TS 29.658 V12.0.0] SIP Transfer of IP Multimedia Service Tariff Information; Protocol specification (Release 12), <http://www.3gpp.org/DynaReport/29658.htm>

[Regulation 31] Regulation 31 on technical aspects of charging in communications networks  
<https://www.viestintavirasto.fi/en/steeringandsupervision/actsregulationsdecisions/regulations/regulation31ontechnicalaspectsofchargingincommunicationsnetworks.html>

## 3 About this document

This document describes some aspect of applying the SIP tariff information described in Recommendation 217/2016 S Finnish profile for SIP tariff interworking.

Aspects not covered in this document or given reference to can be agreed based on bilateral operator agreement.

Every MUST in this document is a strict requirement.

## 4 General information

Operators MUST fulfill requirements of Regulation 31.

It can be bilaterally agreed how to handle error situations where for example the SIP tariff information sent by CDP is not accepted by CGP.

The CGP can include SIP Warning header as defined in RFC 3261 to the 200 OK response of SIP INFO tariff message. All operators MUST accept the Warning header in 200 OK message.

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Warning code 399 and warning text clearly indicating the cause and/or result of the warning can be used.

Information on fault situations can be logged according to guidelines regulating the logging on traffic data.

## 5 Conversion between SIP tariff and ISUP MPM

Introduction of SIP tariff based charging in telephony networks does not affect the current specifications or conventions concerning the ISUP MPM based charging. However, as long as both ISUP MPM based charging and SIP tariff based charging coexist in telephony networks, the conversion between SIP tariff information and ISUP MPM information is required.

If the need arises to change or specify in greater detail the methods concerning ISUP MPM handling due to introduction of SIP tariff, such changes should primarily be handled within ISUP specifications and documents related to ISUP MPM handling.

### 5.1 Guidelines for CDP

The charge indicated by ISUP MPM messages is always the multiple of the price of a metering pulse (0,0673 €, 0% VAT). Even though the call prices are a commercial decision that every operator and/or service provider can make, as long as both SIP and ISUP based charging can be used in the same call, it is RECOMMENDED that the charges indicated by SIP tariff message are defined so that the rounding error to the charge indicated by MPM messages is as small as possible.

The information about the used VAT percentage can't be indicated in SIP tariff message. Because of this the charge indicated by SIP tariff MUST be with 0% VAT.

The 3GPP specification on SIP tariff handling gives a possibility to apply very high prices on calls, and therefore operators MAY apply filters that limit the maximum price that is applied. Price limits for individual can be defined on bilateral traffic agreements between operators.

### 5.2 Guidelines for CGP

When converting the SIP tariff information to ISUP MPM messages, the price of a metering pulse needs to be set in CGP.

When doing the backwards calculation of the charge indicated by currencyFactor and currencyScale to generate ISUP MPM

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messages, the CGP MUST ensure that the price applied is never higher than the price indicated in SIP tariff message. When converting the received tariff information to ISUP MPs (CRG messages), this means the following:

- In time based charging, the CGP MUST round the calculated time interval between consecutive ISUP CRG messages up.
- In time based charging per starting time unit, call setup charge or additional charge, the CGP MUST round the calculated number of MPs down.

Pricing errors between SIP tariff and ISUP MPM may cause inaccuracy in clearing between operators. How to handle this inaccuracy can be agreed bilaterally between operators when taking the 3GPP tariff in use.

### 5.3 Conversion from ISUP MPM to SIP tariff

There is a schematic difference in the method how the charging information is indicated with SIP tariff and how it is indicated with ISUP MPM. The SIP tariff information for call setup charge and time based charging can be given in a single SIP tariff message for the whole duration of the call. On ISUP the charge information is based on the cumulated number of MPM messages during call and the price of a call can be reliably calculated only after the call has ended.

Because of this, the conversion from ISUP MPM to SIP tariff can be reliably done only by using aocrg messages, where each ISUP MPM message should immediately result in a corresponding aocrg message on SIP side. The price indicated in aocrg message MUST be the price of a metering pulse multiplied with the number of metering pulses in ISUP MPM message.

Here it also needs to be noticed that according to 3GPP SIP tariff specification no aocrg message can be sent during call unless at least one crgt message has been sent. This means that the first MPM message MUST be converted to crgt message with Call Setup Charge indicating the MPM price. Subsequent MPM messages MUST be converted to aocrg messages.

Another possible method to transfer call pricing information in SIP networks is to use MPM messages over SIP-I. The decision on using either 3GPP tariff or SIP-I can be done bilaterally between operators.

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## 6 CDR considerations

Below are listed the new 3GPP tariff and SIP parameters that can have influence on the call pricing and on how the tariff is applied. Operators can collect and apply this information as they see necessary.

Time of SIP tariff indication (when the SIP INFO message is sent or received). If several INFO messages are sent during the same call, each INFO message should be noted separately

Call-id header value of the SIP tariff message

Network identification

Time based charge indicated by communicationChargeSequenceCurrency, including the possible cyclic and subtariffs.

Tariff duration

Call Setup Charge

Add On Charge

Delay Until Start

Contents of Warning header from 200 OK reply to SIP tariff INFO message

## 7 Intermediate parties and SIP tariff

If the tariff information is transferred via several operators, SIP tariff messages can be terminated and recreated by any operator included. This gives the transit operators the possibility to modify the tariff information and for example include their own additional fees.

If the tariff information is modified, the modifier MUST replace the Network identification of the SIP tariff message with their own identification information.