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Address formats for Swedish national SIP/SIP-I interconnection

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0 Version history

Versions	Status	Date	Modified by	Comments
1.0	Final	2013-06-18	Ove Persson/Peter Kers	New document.
2.0	Final	2015-11-09	Ove Persson	Separate chapters for SIP and SIP-I. Number information is taken from ISUP part when SIP-I. International number format both in ISUP part and SIP part of SIP-I. "En bloc" method is used both for SIP and SIP-I and in both directions. More definitions added. "+" character is used in the SIP part in both SIP and SIP-I and for both A-nr and B-nr. In ISUP part, the "+" character is not used but the NoA parameter. Ericsson uses Tel URI in Diversion header.
3.0	Final	2016-05-10	Hans Ahlsmo/ Stefan Tjernell	SIP header added to the different formats, additional calling party number and redirected number added.
4.0	Final	2017-03-16	Hans Ahlsmo/ Stefan Tjernell	TeliaSonera logo changed to Telia Operator Business.
5.0	Final	2018-10-23	Hans Ahlsmo/ Stefan Tjernell	TeliaSonera logo changed to Telia Wholesale.
6.0	Final	2019-11-20	Hans Ahlsmo/ Stefan Tjernell/ Anette Hagman/ Lennart Swensån/ Ove Persson	ITS ApG 28 added.
7.0	Final	2020-05-07	Hans Ahlsmo/Stefan Tjernell	Diversion header specified in more detail. Editorial updates after comments from ITS WG NI. Format for eCall added.

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1 Scope

This document is a specification of address formats for Swedish national SIP and SIP-I (IP based) interconnection interfaces [to be used between national operators in Sweden and Telia fixed telephone network](#).

The address formats are related to:

- Calling Party Number, Called Party Number and Generic Number
- National traffic non-ported and ported number traffic cases
- Special cases i.e. 11-number series, National Corporate Numbers 90xxx and [Carrier Selection Code 95XY](#)
- International destination numbers

2 Address formats for SIP/SIP-I interconnection

The SIP headers are used for deriving of address information ([telephone numbers](#)). [International E.164 number format according to ITU-T Recommendation E.164 shall be used in SIP header](#).

For SIP-I, the ISUP part is used for deriving of address information ([telephone numbers](#)). [International E.164 number format according to ITU-T Recommendation E.164 shall be used in both the ISUP part and the SIP part of SIP-I](#).

During signaling the "en bloc" method is used for both SIP and SIP-I in both directions.

2.1 Definitions and Abbreviations

AB	eCall discriminator Values: AB = 00: Automatic eCall AB = 01: Manual eCall
[CC]	Country Code, 1-3 digits
E.164	An ITU-T Recommendation
ISUP	ISDN User Part
ITU-T	International Telecommunications Union – Telecommunication Standardization Sector
MIC	3 digits municipal code, according to Swedish standard ITS ApG 21
kkk	origin of call according to information provided by assignee – see ITS ApG 9
NDC	National Destination Code
NoA	Nature of Address
[NSN]	National (Significant) Number
[RN], ZXY	Routing Number, three digits, according to Swedish Number Portability, Swedish standard SS 63 63 90/SS 63 63 92
SIP	Session Initiation Protocol

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SIP-I	Session Initiation Protocol with encapsulated ISUP
[SN]	Subscriber Number
x, x...	Digit, digit string
XY	Carrier Selection Code , 2 digits according to assignment by PTS

3 Calling party number

3.1 SIP

The Calling Party Number shall be provided in International E.164 Number Format in SIP. The “+” character is used to indicate international number format. The number information shall be provided in:

<i>SIP Header</i>	<i>Number information</i>
P-Asserted-Identity	Calling Party Number
From	Calling Party Number

The following SIP format shall be used:

```

p-asserted-identity: <sip:+[CC] [NSN]@operator;user=phone>
From: <sip:+[CC] [NSN]@operator;user=phone>
```

The A-number included in P-Asserted-Identity header is regarded as validated in the originated network.

There is no requirement on the CONTACT header.

3.2 SIP-I

The Calling Party Number shall be provided in international E.164 Number Format in both ISUP part and SIP part of SIP-I. The “+” character is used in the SIP part to indicate international number format. In the ISUP part the “+” character is not used but the NoA parameter.

The number information shall be provided in:

<i>SIP Header</i>	<i>Number information</i>
P-Asserted-Identity	Calling Party Number

<i>ISUP parameter</i>	<i>Number information</i>
Calling Party Number	Calling Party Number

The following SIP format shall be used:

```

p-asserted-identity: <sip:+[CC] [NSN]@operator;user=phone>
```

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The following ISUP format shall be used:

<[CC] [NSN]> with Nature of Address=4

A-nr validation is based on ISUP parameter Calling Party Number.

4 Called party number

4.1 SIP

The Called Party Number shall be provided in International E.164 Number Format. The “+” character is used to indicate international number format. The number information shall be provided in:

SIP Header	Number information
Invite	Called Party Number
To	Called Party Number

The following format shall be used for Not Ported national numbers:

**Invite: <sip:+46 [NSN]@operator;user=phone>
To: <sip:+46 [NSN]@operator;user=phone >**

The following format shall be used for Ported national numbers:

**Invite: <sip:+46 394 [RN] [NSN]@operator;user=phone >
To: <sip:+46 394 [RN] [NSN]@operator;user=phone >**

The following format shall be used for International destination numbers:

**Invite: <sip:+[CC] [NSN]@operator;user=phone >
To: <sip:+[CC] [NSN]@operator;user=phone >**

4.2 SIP and short code information in 11- and 90-series

4.2.1 General

According to ITS ApG 9, numbers that begins with 11 and 90, which cannot be represented in national E.164 number format, shall use NDC 379 to convert the number to international E.164 number format.

Some of the numbers in 11- and 90-series shall use formats for Number portability.

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In SIP headers Invite, From, To and P-asserted-Identity the number format must be in international E.164 format, hence following formats shall be used (only Invite header format is shown hereafter):

```
Invite: < sip:+46 379 11x... @operator;user=phone >  
Invite: < sip:+46 379 90xxx@ operator;user=phone >  
Invite: < sip:+46 394 [RN] 379 11x... @ operator;user=phone >  
Invite: < sip:+46 394 [RN] 379 90xxx@ operator;user=phone >
```

4.2.2 Emergency number 112 / 90 000

In case where customer has dialled 90000 the originating operator shall translate the number to 112.

The number format for Emergency calls shall be:

```
Invite: < sip:+46 379 112MIC@operator;user=phone>
```

4.2.3 Emergency number 112 for eCall

The number format for an Emergency eCall shall be:

```
Invite: < sip:+46 379 112ABMIC@operator;user=phone>
```

4.2.4 National information number for non-emergent events 11313

The number format for National information number for non-emergent events shall be:

```
Invite: < sip:+46 379 11313kkk@operator;user=phone>
```

4.2.5 Police number 11414

The number format for Police calls shall be:

```
Invite: < sip:+46 379 11414kkk@operator;user=phone>
```

4.2.6 Medical help-line number 1177

The number format for Medical help-line calls shall be:

```
Invite: < sip:+46 379 1177kkk@operator;user=phone>
```

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4.2.7 Harmonized numbers for harmonized services of social value 116xxx

116xxx numbers are always treated by ACQ-operators as ported number.

From all ACQ operators the following format shall be used:

```
Invite: < sip:+46 394 ZXY 379 116xxx@operator;user=phone >
```

From non-ACQ operators the following format shall be used:

```
Invite: < sip:+46 379 116xxx@operator;user=phone >
```

4.2.8 Directory enquiry service numbers 118xxx

The number format for Directory enquiry service calls shall be:

```
Invite: < sip:+46 379 118xxx@operator;user=phone >
```

4.2.9 National corporate numbers 90xxx

90xxx numbers are always treated by ACQ-operators as ported number.

From all ACQ operators the following format shall be used:

```
Invite: < sip:+46 394 ZXY 379 90xxx@operator;user=phone >
```

From non-ACQ operators the following format shall be used:

```
Invite: < sip:+46 379 90xxx@operator;user=phone >
```

4.2.10 Equal Access information 95xx

[Carrier Selection Code](#) cannot be directly represented in E.164 format. NDC 379 shall be used to convert the number to international [E.164](#) number format. In SIP headers the number format must be in international [E.164 number](#) format, hence following formats shall be used:

```
Invite: < sip:+46 379 95XY [SN]@operator;user=phone >  
Invite: < sip:+46 379 95XY 0 [NSN]@operator;user=phone >  
Invite: < sip:+46 379 95XY 00 [CC] [NSN]@operator;user=phone >
```

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4.3 SIP support for Premium rate and Mass call services (ITS ApG 28)

The Premium rate and Mass call services can be exchanged between operators in Sweden. This is specified in ITS ApG 28 which defines the following number format:

- ZXY= 3 digits routing number (PTS plan for Routing numbers for number portability according to Swedish standard SS 63 63 90/SS 63 63 92)
- AAA=389, 3 digits routing number for Correlation numbers allocated by PTS.
- XXX= PRM Correlation number as decided by the terminating operator. 3 to 13 digits.

This type of address format is used to send calls from a service operator (where the charging platform is hosted) to the terminating operator (where the content platform is hosted), when different operator networks are used.

The services to use this address format are:

- Premium rate numbers NDC 900, 939 and 944
- Mass call numbers NDC 99

The following number format shall be used:

Invite: <sip:+46 394 ZXY 389 XXX@operator;user=phone>

4.4 SIP-I

The Called Party Number shall be provided in international E.164 Number Format in both ISUP part and SIP part (see ch. 4.1) of SIP-I. The “+” character is used in the SIP part to indicate international number format. In the ISUP part the “+” character is not used but the NoA parameter.

The number information shall be provided in:

<i>ISUP parameter</i>	<i>Number information</i>
Called Party Number	Called Party Number

The following ISUP format shall be used for Not Ported national numbers:

<46 [NSN]> with Nature of Address=4

The following ISUP format must be used for Ported national numbers:

<46 394 [RN] [NSN]> with Nature of Address=4

The following ISUP format shall be used for International destination numbers:

<[CC] [NSN]> with Nature of Address=4

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4.5 SIP-I and short code information in 11- and 90-series

4.5.1 General

According to ITS ApG 9, numbers that begins with 11 and 90, which cannot be represented in national E.164 number format, shall use NDC 379 to convert the number to international E.164 number format.

Some of the numbers in 11- and 90-series shall use formats for Number portability.

In ISUP part of SIP-I the number format must be in international E.164 format, hence following ISUP formats shall be used:

<46 379 11x...> with Nature of Address=4
<46 379 90xxx> with Nature of Address=4
<46 394 [RN] 379 11x...> with Nature of Address=4
<46 394 [RN] 379 90xxx> with Nature of Address=4

The SIP part in SIP-I conforms to ch. 4.2.

4.5.2 Emergency number 112 / 90 000

In case where customer has dialled 90000 the originating operator shall translate the number to 112.

The ISUP number format for Emergency calls shall be:

<46 379 112MIC> with Nature of Address=4

4.5.3 Emergency number 112 for eCall

The ISUP number format for an Emergency eCall shall be:

<46 379 112ABMIC> with Nature of Address=4

4.5.4 National information number for non-emergent events 11313

The number ISUP format for National information number for non-emergent events shall be:

<46 379 11313kkk> with Nature of Address=4

4.5.5 Police number 11414

The number ISUP format for Police calls shall be:

<46 379 11414kkk> with Nature of Address=4

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4.5.6 Medical help-line number 1177

The number ISUP format for Medical help-line calls shall be:

<46 379 1177kkk> with Nature of Address=4

4.5.7 Harmonized numbers for harmonized services of social value 116xxx

116xxx numbers are always treated by ACQ-operators as ported number.

From all ACQ operators the following ISUP format shall be used:

<46 394 ZXY 379 116xxx> with Nature of Address=4

From non-ACQ operators the following ISUP format shall be used:

<46 379 116xxx> with Nature of Address=4

4.5.8 Directory enquiry service numbers 118xxx

The number ISUP format for Directory enquiry service calls shall be:

<46 379 118xxx> with Nature of Address=4

4.5.9 National corporate numbers 90xxx

90xxx numbers are always treated by ACQ-operators as ported number.

From all ACQ operators the following ISUP format shall be used:

<46 394 ZXY 379 90xxx> with Nature of Address=4

From non-ACQ operators the following ISUP format shall be used:

<46 379 90xxx> with Nature of Address=4

4.5.10 Equal Access information 95xx

[Carrier Selection Code](#) cannot be directly represented in E.164 format. NDC 379 shall be used to convert the number to international [E.164](#) number format.

In ISUP part of SIP-I the number format will be in international [E.164 number](#) format, hence following ISUP formats shall be used:

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**<46 379 95XY [SN]> with Nature of Address=4
<46 379 95XY 0 [NSN]> with Nature of Address=4
<46 379 95XY 00 [CC] [NSN]> with Nature of Address=4**

4.6 SIP-I support for Premium rate and Mass call services (ITS ApG 28)

The Premium rate and Mass call services can be exchanged between operators in Sweden. This is specified in ITS ApG 28 which defines the following number format:

- ZXY= 3 digits routing number (PTS plan for Routing numbers for number portability according to Swedish standard SS 63 63 90/SS 63 63 92)
- AAA=389, 3 digits routing number for Correlation numbers allocated by PTS.
- XXX= PRM Correlation number as decided by the terminating operator. 3 to 13 digits.

This type of address format is used to send calls from a service operator (where the charging platform is hosted) to the terminating operator (where the content platform is hosted), when different operator networks are used.

The services to use this address format are:

- Premium rate numbers NDC 900, 939 and 944
- Mass call numbers NDC 99

In ISUP part of SIP-I the number format must be in international E.164 format, hence following ISUP formats shall be used:

<46 394 ZXY 389 XXX> with Nature of Address=4

4.7 Generic Number - Additional Calling Party Number

4.7.1 SIP

<i>SIP Header</i>	<i>Number information</i>
From	Generic Number (incl. Additional Calling Party Number)

The following SIP format shall be used:

From: <sip:+[CC] [NSN]@operator;user=phone>

4.7.2 SIP-I

<i>ISUP parameter</i>	<i>Number information</i>
Generic Number	Additional Calling Party Number

The following ISUP format shall be used:

<46 [NSN]> with Nature of Address=4

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4.8 Redirecting number

4.8.1 SIP

<i>SIP Header</i>	<i>Number information</i>
Diversion	Redirecting Number

A Tel [URI](#) or SIP URI format will be used in [the](#) Diversion Header.

Single diversion header format:

Diversion: <tel:+[CC] [NSN]>; counter=1; reason=unknown; privacy=off
Diversion: <sip:+[CC] [NSN]>; counter=1; reason=unknown; privacy=off

Multiple diversion header format:

Diversion: <tel:+[CC] [NSN]>; counter=1; reason=unconditional; privacy=full,
<tel:+[CC] [NSN]>; counter=1; reason=unknown; privacy=off
Diversion: <sip:+[CC] [NSN]>; counter=1; reason=unconditional; privacy=full,
<sip:+[CC] [NSN]>; counter=1; reason=unknown; privacy=off

Reason code depends on the reason for the diversion.

Privacy value "off" is used if the number is not protected or privacy value "full" is used if the number is protected. The counter value is equal to the number of redirections to a specific number. To get the total number of redirected calls all values in the included counters must be added.

4.8.2 SIP-I

The Diversion header in SIP is not included and the relevant ISUP parameter is Redirecting Number.

<i>ISUP parameter</i>	<i>Number information</i>
Redirecting Number	Redirecting Number

The following ISUP format shall be used:

<46 [NSN]> with Nature of Address=4