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Foreword

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Foreword

This Technical Specification (TS) was been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN) and originally published as ETSI TS 183 016 [12]. It was transferred to the 3rd Generation Partnership Project (3GPP) in December 2007.

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1 Scope

The present document specifies the, stage three, Protocol Description of the Malicious Call Communication Identification (MCID) service based on the stage one and two of ISDN Malicious Call Identification supplementary service. Within the Next Generation Network (NGN) the stage 3 description is specified using the IP-Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP). The MCID service will store session related information independent of the service requested.

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, edition number, version number, etc.) or non-specific.
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- [1] ETSI TS 181 002: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Multimedia Telephony with PSTN/ISDN simulation services".
- [2] ETSI ES 283 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia Call Control Protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP) Stage 3 [3GPP TS 24.229 (Release 7), modified]".
- [3] Void.
- [4] ETSI TS 181 006: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Direct Communication Service in NGN; Service Description [Endorsement of OMA-ERELD-PoC-V1] NGN DC stage 1".
- [5] Void.
- [6] Void.
- [7] Void.
- [8] Void.
- [9] ETSI TS 183 033: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); IP Multimedia; Diameter based protocol for the interfaces between the Call Session Control Function and the User Profile Server Function/Subscription Locator Function; Signalling flows and protocol details [3GPP TS 29.228 V6.8.0 and 3GPP TS 29.229 V6.6.0, modified]. Endorsement of 29.228 & 29.229".
- [10] IETF RFC 3966: "The tel URI for Telephone Numbers".
- [11] IETF RFC 3986: "Uniform Resource Identifier (URI): Generic Syntax".

- [12] ETSI TS 183 016 V2.5.0: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); PSTN/ISDN simulation services; Malicious Communication Identification (MCID); Protocol specification".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TS 181 002 [1], TS 181 006 [4], TR 180 000 and the following apply:

communication information: information collected and registered by the MCID service

identity information: includes all the information (RFC 3966 [10] and RFC 3986 [11]) identifying a user, including trusted (network generated) and/or untrusted (user generated) identities

trusted identity: network generated user address information

untrusted identity: user generated user address information

3.2 Abbreviations

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

ACR	Anonymous Communication Rejection
AS	Application Server
BGCF	Border Gateway Control Function
CB	Communication session Barring
CD	Communication Deflection
CDIV	Communication DIVersion Services
CFB	Communication Forwarding Busy
CFNL	Communication Forwarding on Not Logged-in
CFNR	Communication Forwarding No Reply
CFU	Communication Forwarding Unconditional
CONF	Conference
CW	Call Waiting
DPII	Destination Party Identity Information
ECT	Explicit Communication Transfer
HOLD	communication Hold
IBCF	Interconnection Border Control Function
I-CSCF	Interrogating - Call Service Control Function
IM	IP Multimedia
IMS	IP Multimedia Subsystem
IP	Internet Protocol
ISDN	Integrated Service Digital Network
MCID	Malicious Call Identification
MGCF	Media Gateway Control Function
NGN	Next Generation Network
OIP	Originating Identification Presentation
OIR	Originating Identification Restriction
OPII	Originating Party Identity Information
PSTN	Public Switched Telephone Network
P-CSCF	Proxy - Call Service Control Function
S-CSCF	Service - Call Session Control Function
SDP	Session Description Protocol
SIP	Session Initiation Protocol
TIP	Terminating Identification Presentation
TIR	Terminating Identification Restriction
UE	User Equipment

URI Uniform Resource Identifier

4 Malicious Communication Identification (MCID)

4.1 Introduction

The MCID service will store session related information of incoming communications independent of the service requested. The following communication information shall be registered:

- Destination Party Identity Information;
- originating Party Identity Information; and
- local time and date of the invocation in the network serving the called user.

The communication information shall not be available to the terminal equipment under the control of the called user nor the originating user. The communication information shall be stored at a location(s) under the control of the network operator.

A network subscription option may be provided which allows automatic invocation of MCID service on communications to the served user which are not answered.

NOTE: The purpose of this option is to allow for registration of communications that ring for a short time only.

A user subscription option where the MCID service can either be invoked during the active phase of the communication, or after the active phase for a limited period but never after communication termination by the served user.

4.2 Description

4.2.1 General description

The Malicious Communication Identification (MCID) service allows the service provider to trace the identity information of the source of an incoming communication on request of the destination user.

4.3 Operational requirements

4.3.1 Provision/withdrawal

This service shall be provided and withdrawn after pre-arrangement with the service provider, in accordance with national legal requirements.

This service has two modes: permanent mode and temporary mode. The permanent mode is active for all incoming communications, and the temporary mode is active only for the incoming communications declared by the served user.

As a network option, the MCID service can be offered with several subscription options. A network providing the MCID service shall support permanent mode at a minimum. Subscription options are summarized in table 4.3.1.1.

Table 4.3.1.1: Subscription options for MCID services

Subscription options	Value
Mode	Permanent Mode Temporary Mode

4.3.2 Requirements on the originating network side

No specific requirements are needed in the originating network.

4.3.3 Void

Void.

4.3.4 Requirements on the terminating network side

No specific requirements are needed in the terminating network.

4.4 Coding requirements

The present clause defines the XML Schema to be used for providing the MCID Request/Response and to invoke the temporary mode of the MCID Service.

The application/vnd.etsi.mcid+xml MIME type used to provide request of a missing originating ID and the delivery of the requested originating id AS of the served user shall be coded as following described:

```
<?xml version="1.0" encoding="UTF-8"?>
```

```
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns="http://uri.etsi.org/ngn/params/xml/simservs/mcid"
targetNamespace="http://uri.etsi.org/ngn/params/xml/simservs/mcid" elementFormDefault="qualified">
```

```
  <xs:annotation>
```

```
    <xs:documentation>XML Schema Definition to the mcid request-response to the Malicious Communication
Identification simulation service</xs:documentation>
```

```
  </xs:annotation>
```

```
  <!--Definition of simple types-->
```

```
  <xs:simpleType name="bitType">
```

```
    <xs:restriction base="xs:string">
```

```
      <xs:pattern value="[0-1]"/>
```

```
    </xs:restriction>
```

```
  </xs:simpleType>
```

```
  <!--Definition of complex types-->
```

```
  <xs:complexType name="requestType">
```

```
    <xs:sequence>
```

```
      <xs:element name="McidRequestIndicator" type="bitType"/>
```

```
      <xs:element name="HoldingIndicator" type="bitType"/>
```

```
    </xs:sequence>
```

```
  </xs:complexType>
```

```
  <xs:complexType name="responseType">
```

```
    <xs:sequence>
```

```
      <xs:element name="McidResponseIndicator" type="bitType"/>
```

```
      <xs:element name="HoldingProvidedIndicator" type="bitType"/>
```

```
    </xs:sequence>
```

```
  </xs:complexType>
```

```
  <!--Definition of document structure-->
```

```
  <xs:element name="mcid">
```

```
    <xs:complexType>
```

```
      <xs:choice>
```

```
        <xs:element name="request" type="requestType"/>
```

```
        <xs:element name="response" type="responseType"/>
```

```
      </xs:choice>
```

```
    </xs:complexType>
```

```
  </xs:element>
```

```
</xs:schema>
```

4.5 Signalling requirements

4.5.1 Activation/deactivation/registration

The MCID service is provisioned only by the network operator as an automatic invocation on all calls to the served user.

NOTE: On demand invocation by the user may be available in later releases.

4.5.2 Invocation and operation

4.5.2.1 Actions at the originating UE

Basic communication procedures according to ES 283 003 [2] shall apply.

4.5.2.2 Actions at the originating P-CSCF

Basic communication procedures according to ES 283 003 [2] shall apply.

4.5.2.3 Actions at the originating S-CSCF

Basic communication procedures according to ES 283 003 [2] shall apply.

4.5.2.4 Actions at the terminating S-CSCF

Basic communication procedures according to ES 283 003 [2] shall apply.

If the subscriber has a permanent or case by case subscription, based on Initial Filter Criteria (IFC) the INVITE request is forwarded to the AS that provides the MCID service. Annex B provides an example on how an Initial Filter Criteria (IFC) can be configured.

4.5.2.5 Actions at the AS of the terminating user

The AS shall at the minimum store the following elements of a received INVITE request:

- Destination Party Identity Information included in the Request-URI;
- Originating Party Identity Information included in the P-Asserted-Identity header field, if the P-Asserted-Identity header field is included in the request;
- local time and date of the invocation in the network serving the called user;
- call diversion information received in the History-Info header, if the History-Info header field is included in the request (escaped Reason);
- Referred-By header field when available;
- Contact header;
- To header; and
- From header.

NOTE: The Originating Party Identity Information included in the P-Asserted-Identity header field is always present in the INVITE request if the request is originated in a trusted network.

If the INVITE request does not contain the information of the originating party, the AS shall send an INFO request including an Identification Request MIME body.

When receiving the INFO request containing identification information, the AS shall at the minimum store the following information:

- Destination Party Identity Information included in the INVITE Request-URI;
- Originating Party Identity Information included in the INFO body;
- local time and date of the invocation in the network serving the called user;
- call diversion information received in the History-Info header, if the History-Info header field is included in the request (escaped Reason); and
- Contact header field.

4.5.2.5.1 Subscriber has a permanent supervision

The AS shall register stored information. The exact procedure to register the information is implementation dependent and out of scope of the present document.

4.5.2.5.2 Subscriber has a temporary subscription

The AS shall store the required elements of a received INVITE request until the communication has been terminated for a limited period.

A received RE-INVITE of the served user is identified as MCID request and the AS shall register the required information.

The exact procedure to register the information is implementation dependent and out of scope of the present document.

After receiving a BYE from the originating side the call state shall be held for a current time defined by Timer $T_{\text{MCID-BYE}}$.

With expiry of the $T_{\text{MCID-BYE}}$ the BYE shall be forwarded to the served user and the communication shall be released according to the basic communication procedures defined in ES 283 003 [2].

If no MCID request was received the stored elements for the last communication shall be deleted.

4.5.2.5.3 Request of a missing or incomplete originating Id (network option)

The present clause is applicable when interacting with the PSTN/ISDN.

If a received initial INVITE does not contain an originating identification or a incomplete originating identification the AS shall send a INFO Message containing a XML mcid body with MCID XML Request schema requesting the originating ID towards the originating network.

After sending of the INFO requesting the originating id, timer $T_{\text{O-ID}}$ (as defined in clause 4.8) is started.

When the Identification response (INFO containing a XML mcid body with MCID XML Response schema and the originating identity) is received:

- the timer $T_{\text{O-ID}}$ is stopped; and
- the MCID information is stored;and
- a 180 Ringing response is sent towards the originating user according to the basic communication procedures.

When a Identification response INFO message is received without the MCID information:

- timer $T_{\text{O-ID}}$ is stopped; and
- a 180 Ringing response is sent towards the originating user according to the basic communication procedures.

When the timer $T_{\text{O-ID}}$ expires before an Identification response INFO message is received, a 180 Ringing response is sent towards the originating user according to the basic communication procedures.

4.5.2.6 Actions at the incoming I-CSCF

Basic communication procedures according to ES 283 003 [2] shall apply.

4.5.2.7 Actions at the outgoing IBCF

Basic communication procedures according to ES 283 003 [2] shall apply.

4.5.2.8 Actions at the incoming IBCF

Basic communication procedures according to ES 283 003 [2] shall apply.

4.5.2.9 Actions at the BGCF

Basic call procedures according to ES 283 003 [2] shall apply.

NOTE: The interworking with other NGN is described in clause 4.7.3.

4.5.2.10 Actions at the MGCF

Basic call procedures according to ES 283 003 [2] shall apply.

NOTE: The interworking with other NGN is described in clause 4.7.3.

4.5.2.11 Actions at the destination P-CSCF

Basic communication procedures according to ES 283 003 [2] shall apply.

4.5.2.12 Actions at the destination UE

Basic communication procedures according to ES 283 003 [2] shall apply.

4.5.2.12.1 Subscriber has a temporary subscription

In case of invoking the MCID service the UE shall send a Re-INVITE.

As a network operator option including a XML-MIME with XML mcid body with MCID XML Request schema containing a MclidRequestIndicator set to 1 could be sent.

4.6 Interaction with other services

4.6.1 Communication Hold (HOLD)

No impact, i.e. neither service shall affect the operation of the other service.

4.6.2 Terminating Identification Presentation (TIP)

No impact, i.e. neither service shall affect the operation of the other service.

4.6.3 Terminating Identification Restriction (TIR)

No impact, i.e. neither service shall affect the operation of the other service.

4.6.4 Originating Identification Presentation (OIP)

No impact, i.e. neither service shall affect the operation of the other service.

4.6.5 Originating Identification Restriction (OIR)

Even if the originating identification is a secret (restricted) identification, MCID invocation is possible.

4.6.6 Conference (CONF)

No impact, i.e. neither service shall affect the operation of the other service.

4.6.7 Communication Diversion Services (CDIV)

The MCID service can be invoked for a diverted communication. In addition to the normal operation of the MCID service, the identity of the first diverting user shall be registered and, as a network option, the last diverting user can be registered.

4.6.7.1 Communication Forwarding Unconditional (CFU)

If the served user has activated CFU service, once forwarding has taken place, the forwarding user cannot invoke the MCID service.

4.6.7.2 Communication Forwarding Busy (CFB)

If the served user has activated CFB, once forwarding has taken place, the forwarding user cannot invoke the MCID service.

4.6.7.3 Communication Forwarding No Reply (CFNR)

If the served user has activated CFNR, once forwarding has taken place, the forwarding user (served user) cannot invoke the MCID service.

The MCID service shall not be automatically invoked when an alerting communication is terminated due to the invocation of the communication forwarding no reply service.

4.6.7.4 Communication Forwarding on Not Logged-In (CFNL)

If the served user has activated CFNL, once forwarding has taken place, the forwarding user (served user) cannot invoke the MCID service even after a log-in procedure.

The MCID service shall not be automatically invoked when an alerting communication is terminated due to the invocation of the communication forwarding not logged in service.

4.6.7.5 Communication Deflection (CD)

If the served user has activated communication deflection, once deflection has taken place, the deflecting user cannot invoke the MCID service.

The MCID service shall not be automatically invoked when an alerting communication is terminated due to the invocation of the communication deflection service.

4.6.8 Call Waiting (CW)

No impact, i.e. neither service shall affect the operation of the other service.

4.6.9 Anonymous Communication Rejection and Communication session Barring (ACR/CB)

No impact, i.e. neither service shall affect the operation of the other service.

4.6.10 Explicit Communication Transfer (ECT)

If the transferor invokes the malicious communication identification simulation service on an initial communication after that communication has been successfully transferred then the AS will reject the request.

4.7 Interactions with other networks

4.7.1 Interworking with the PSTN/ISDN

4.7.1.1 Interworking at the O-MGCF

The following clause describes the interworking of the request/response mechanism for a missing originating identity in the initial INVITE.

ISUP Message	SIP Message
IDR	INFO containing a XML mcid body with MCID XML Request schema
IDS	INFO containing a XML mcid body with MCID XML Response schema

4.7.1.1.1 Interworking of the MCID XML Request schema with the ISUP MCID request indicators

The following codes are used in the MCID request indicators parameter field.

bit A:	ISUP Parameter	XML Element
bit A:	MCID request indicator	McidRequestIndicato
0	MCID not requested	type=0
1	MCID requested	type=1
bit B:	Holding indicator (national use)	HoldingIndicator
0	holding not requested	type=0
1	holding requested	type=1

4.7.1.1.2 Interworking of the ISUP MCID response indicators with the MCID XML Response schema

The following codes are used in the MCID response indicators parameter field.

	ISUP Parameter	XML Element
bit A:	MCID response indicator	McidResponseIndicator
0	MCID not included	type=0
1	MCID included	type=1
bit B:	<i>Hold provided indicator (national use)</i>	HoldingProvidedIndicator
0	holding not provided	type=0
1	holding provided	type=1

4.7.1.2 Interworking at the I-MGCF

Not applicable.

4.7.2 Interaction with PSTN/ISDN emulation

No MCID service specific impact identified.

4.7.3 Interaction with external IP network

If the other external IP network is supporting MCID regarding the present document no impact is seen.

4.8 Parameter values (timers)

A new timer is identified in the destination exchange:

Timer T_{O-ID} : 4-15 seconds.

Timer T_{O-ID} is initiated only at the AS of the served user after sending an MCID request in an INFO message and is stopped at the receipt of an INFO containing a XML mcid body with MCID XML Response schema.

At expiry of the timer, the communication continues according to the basic communication procedures.

A new timer is identified in the AS to count the post time for invoking the MCID temporary mode.

Timer $T_{MCID-BYE}$: recommended 0-120 seconds. The timer value is defined by the Operator.

Timer $T_{MCID-BYE}$ initiated only at the AS of the served user after receiving a CANCEL or BYE request.

At expiry of the timer, the communication continues shall be released according to the basic communication procedures defined in ES 283 003 [2].

Annex A (informative): Signalling Flows

A.1 MCID invocation

The MCID invokes, in the destination, the storage of data.

Figure A.1 shows an example signalling flow for the scenario.

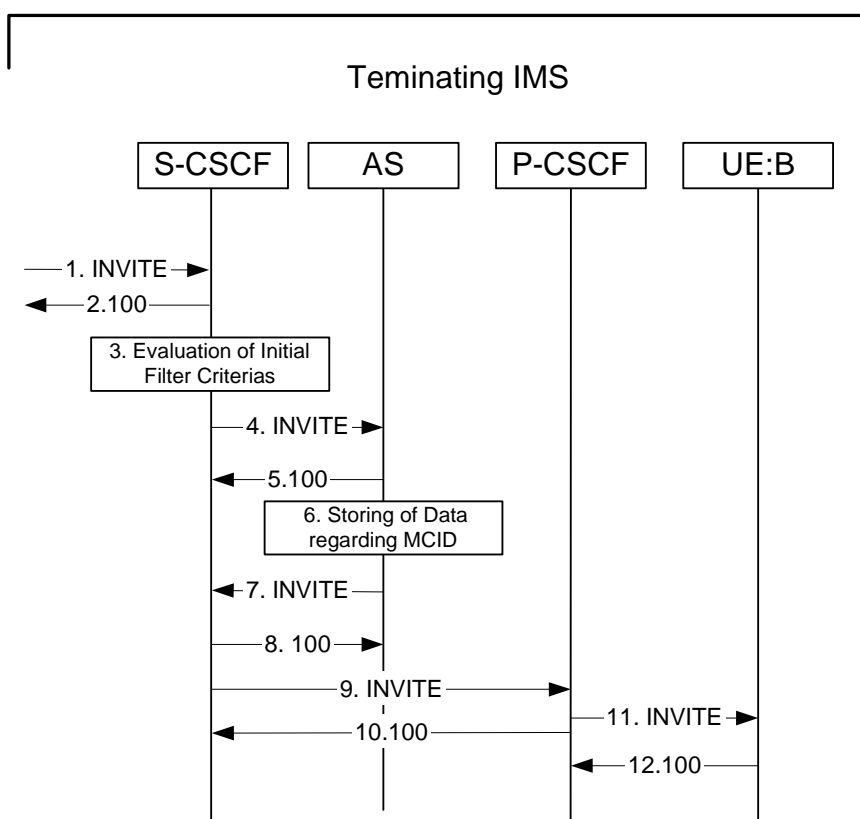


Figure A.1: MCID Permanent and triggered by the B user

The steps of the flow are as follows:

- 1) INVITE request (to S-CSCF).

The INVITE request is sent from the UE to S-CSCF. The INVITE includes a P-Asserted-Identity as follows:

P-Asserted-Identity: "John Doe" <tel:+1-212-555-1111> with Privacy: id or Privacy header or Privacy user.

- 2) 100 (Trying) Response (from S-CSCF).
- 3) Evaluation of initial filter criteria.

The initial Filter criteria identifies that the requested URI is subscribed to the MCID service. Therefore the S-CSCF forwards the INVITE to the MCID AS.

- 4) INVITE request (S-CSCF to AS).

INVITE is sent to the AS.

- 5) 100 Response from S-CSCF.
- 6) AS stores Data.

AS stores:

- Request URI.
- To header.
- P-Asserted-Identity header.
- From header.
- Contact header.
- Time and date.

7-12) INVITE request(S-CSCF to AS).

INVITE is send towards the UE:B.

A.2 Identity information not present in the initial request

Hereby, we show a PSTN to NGN scenario, but notice that any call, originated in the PSTN domain and being diverted before reaching the served user AS, must be treated in the same manner. The terminating AS sends a 18x provisional response previous to sending a SIP INFO message, which requests the information from the originating network. It can then route the call while waiting for an answer to the INFO request. Note that the 18x response is sent reliably, should not indicate ringing (should not be a 180 response), and contains no SDP. This 18x response establishes a early dialog, which is needed before the INFO request can be sent.

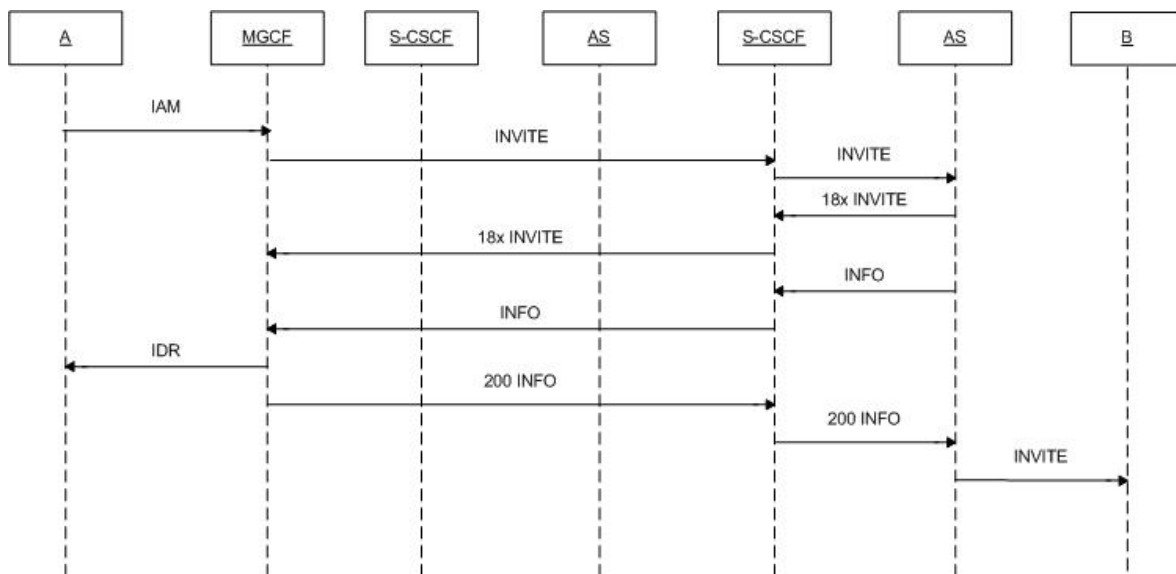


Figure A.2.1:MCID with Information Request towards the ISDN/PSTN

The Terminating AS will then wait for an INFO request containing the response to the information query in the previous INFO request. This message provides the requested identity. If such a message is not received within a period of time, the service cannot be provided.

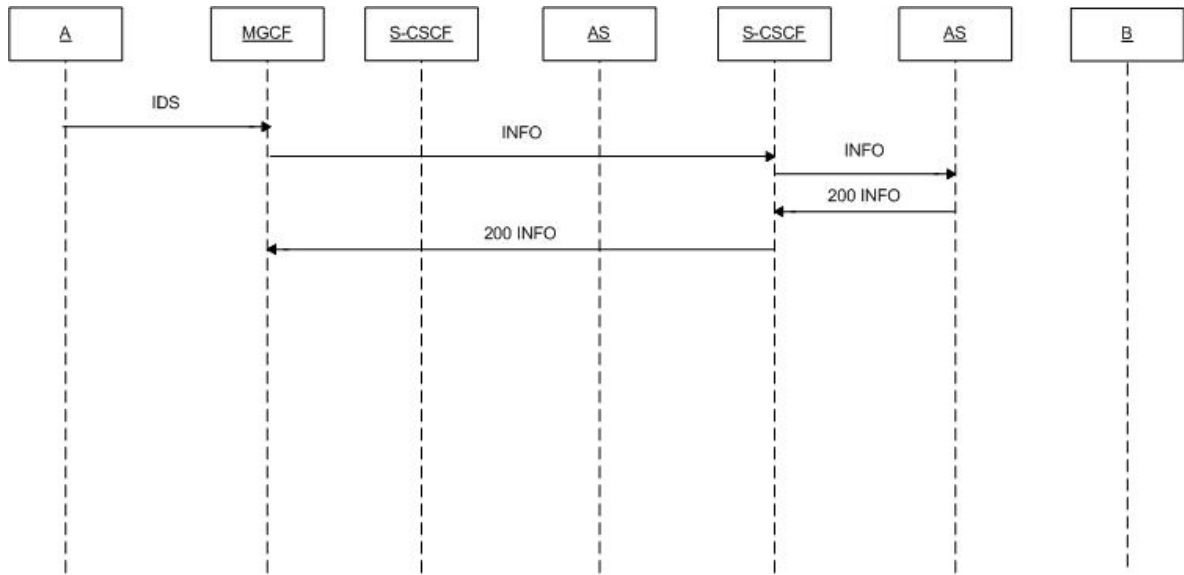


Figure A.2.2: MCID with Information Response towards the ISDN/PSTN

A.3 MCID invocation in temporary mode

The MCID invokes, in the destination, the storage of data.

Figure A.3.1 shows an example signalling flow for the scenario.

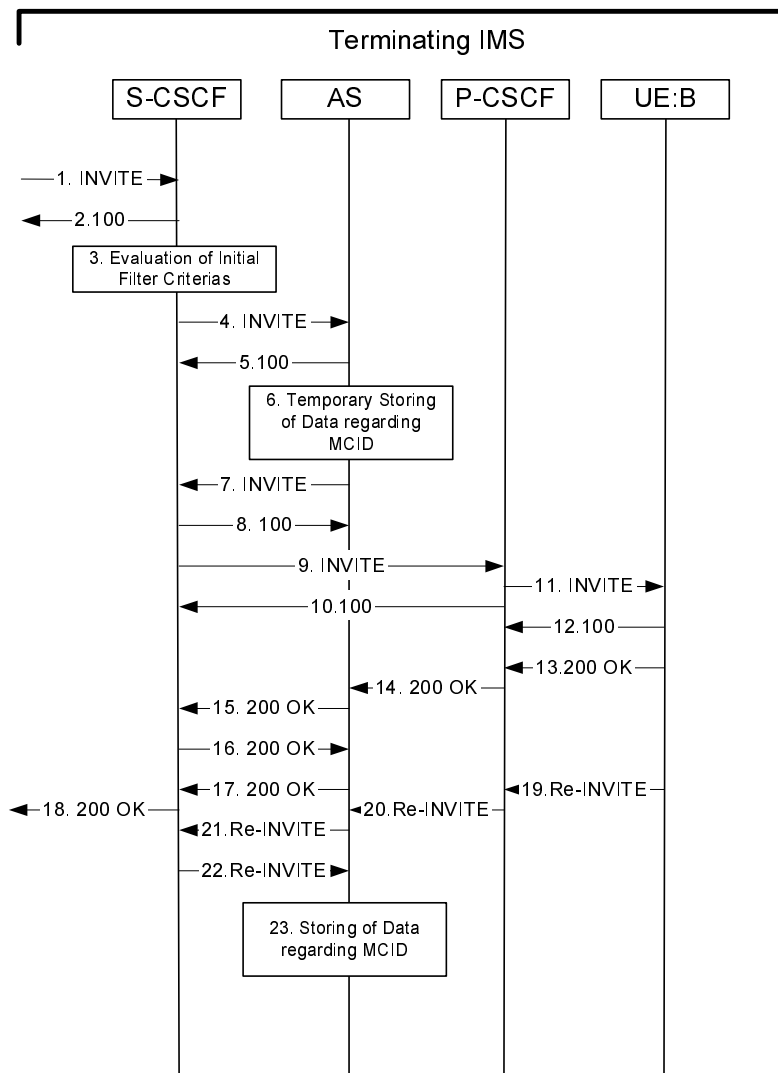


Figure A.3.1: MCID Permanent and triggered by the B user

The steps of the flow are as follows:

- 1) INVITE request (to S-CSCF).

The INVITE request is sent from the UE to S-CSCF The INVITE includes a P-Asserted-Identity as follows:

P-Asserted-Identity: "John Doe" <tel:+1-212-555-1111> with Privacy: id or Privacy header or Privacy user.

- 2) 100 (Trying) Response (from S-CSCF).
- 3) Evaluation of initial filter criteria.

The initial Filter criteria identifies that the requested URI is subscribed to the MCID service. Therefore the S-CSCF forwards the INVITE to the MCID AS.

- 4) INVITE request (S-CSCF to AS).

INVITE is send to the AS.

- 5) 100 Response from S-CSCF.
- 6) Temporarily AS stores Data.

AS stores:

- Request URI.
- To header.
- P-Asserted-Identity header.
- From header.
- Contact header.
- Time and date.

7-12) INVITE request(S-CSCF to AS).

INVITE is send towards the UE:B.

NOTE: 180 Ringing is not shown.

13-18) UE-B takes the communication. A200 OK is sent towards UE-A.

19-22) UE-B initiates the temporary mode with sending a Re-INVITE.

23) The AS finally stores the regarding MCID data cached at step 6).

Annex B (informative): Example of filter criteria

This annex provides an example of a filter criterion that triggers SIP requests that are subject to initial filter criteria evaluation.

The coding of the Initial Filter Criteria is described in TS 183 033 [9].

B.1 Terminating S-CSCF

If a user identified by the Request-URI is provided with the MCID service the IFC can be:

The S-CSCF forwards all INVITE requests to the AS providing the MCID service.

Annex C: (void)

Note: In its original form [12] this annex contained the ETSI TISPAN change request history table which now appears at the start of annex E.

Annex D (informative): Bibliography

ETSI ETS 300 128: "Integrated Services Digital Network (ISDN); Malicious Call Identification (MCID) supplementary service; Service description".

ETSI EN 300 356-11: "Integrated Services Digital Network (ISDN); Signalling System No.7 (SS7); ISDN User Part (ISUP) version 4 for the international interface; Part 11: Malicious Call Identification (MCID) supplementary service [ITU-T Recommendation Q.731, clause 7 (1997) modified]".

ETSI ES 283 027: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Endorsement of the SIP-ISUP Interworking between the IP Multimedia (IM) Core Network (CN) subsystem and Circuit Switched (CS) networks [3GPP TS 29.163 (Release 7), modified]".

IETF RFC 3265: "Session Initiation Protocol (SIP) Specific Event Notification".

ETSI TR 180 000: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Terminology".

Annex E (informative): Change history

TISPAN #	TISPAN Doc.	CR	Subject/Comment
13tet	13tTD203r1	001	Proposal on MCID R2 service
13ter	13tTD501r1	002	Correction of O-MGCF and I-MGCF
13ter	13tTD531r1	003	Proposal on the interaction between ECT and MCID

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2006-03					ETSI TISPAN: 1 st Draft for R2.		0.0.1
2006-05					output TISPAN 10bis		0.0.2
2006-06					output TISPAN 10ter		0.0.3
2006-08					input TISPAN#10bis, Inclusion of CR1 to align with MCID R1 Maintenance		0.0.4
2006-09					output TISPAN#11bis		0.0.5
2006-10					output TISPAN#11ter		0.0.6
2007-02					output TISPAN#12ter including 12tTD163r1 (addition of temporary mode)		2.1.0
2007-03					clean input for TISPAN#13bis		2.1.1
2007-03					agreed output TISPAN#13bis inclusion of 13bTD358 and 13bTD308		2.2.0
2007-05					INPUT version for TISPAN#13ter with editorial changes		2.3.0
2007-05					OUTPUT version for TISPAN#13ter		2.4.0
2007-07					Published as ETSI TS 183 016 Note: History table of ETSI publication shows v2.4.0.		2.5.0
2007-12					Converted to 3GPP TS 24.516		2.5.1
2008-03	CT#39	CP-080091			Based on the decision in CT#39 version 8.0.0 created by MCC	2.5.1	8.0.0

History

Document history		
V8.0.0	April 2008	Publication