Calling Name Delivery (CNAM)

Document Release History

<table>
<thead>
<tr>
<th>Publication Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 25, 2007</td>
<td>Initial version of the document.</td>
</tr>
</tbody>
</table>

Feature History

<table>
<thead>
<tr>
<th>Release</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.7(3)</td>
<td>The Calling Name Delivery (CNAM) feature was introduced on the Cisco MGC software.</td>
</tr>
</tbody>
</table>

This document describes the Calling Name Delivery (CNAM) feature in the following sections:

- Understanding the CNAM Feature, page 1
- Dial Plan Examples, page 7
- Billing Interface, page 9
- Result Type Definitions, page 10
- Troubleshooting the CNAM Feature, page 11
- Obtaining Documentation, Obtaining Support, and Security Guidelines, page 11

Understanding the CNAM Feature

This feature allows the name of the calling party to be delivered to the called party if the called party has subscribed to the CNAM feature. CNAM is a terminating user feature allowing a customer premises equipment (CPE) connected to a switching system to receive a calling party's name during the first silent interval.

The PGW 2200 supports transaction capabilities application part (TCAP) query to a CNAM database, and only if, it is allowed based on calling name delivery blocking (CNAB) and calling identity delivery and suppression (CIDS) information. The calling party name resides in the line information database (LIDB) which is accessed using TCAP query.

Benefits

The following are the benefits of this feature:
• Supports CNAM for PSTN (ANSI SS7) to IP (H.323 and SIP) calls.
• Obtains calling name by performing a TCAP name query to the CNAM database. The query is be
  initiated according to Telcordia Technologies Generic Requirements GR-1188-CORE.
• The decision to query the database depends on the called number.
• The CNAM presentation to the called entity depends on the ISUP and TCAP generic name
  presentation parameters.

Call Flow Examples

The following figures depict the CNAM call flows. In the figures, Query represents an SS7 TCAP query
message, and Response represents an SS7 TCP Response message. The symbol P represents a “private”
indication, and the symbol O represents an “out-of-area/unavailable” indication, in messages sent to the
called user’s CPE when the calling party name cannot be sent. Messages are numbered according to the
time order of occurrence.

Figure 1  CNAM Architecture Call Flow
Figure 2  Calling Name Presentation Restriction

Centralized Residence Name Database

1. IAM (Calling Number, “Presentation Restricted” for Calling Name and Number)

Calling Party dials CIDS Suppression Code

2. “P”

Terminating Switch

Called Party with CNAM

Figure 3  Calling Name Presentation Allowed

Centralized Residence Name Database

1. IAM (Calling Number, “Presentation Allowed” for Calling Name and Number)

Calling Party dials CIDS Delivery Code

2. Query (Name Request, Calling Number)

Query (Name Request, Calling Number)

3. Response (Name and “Private” Permanent Privacy Status)

Centralized Residence Name Database

4. Name

Called Party with CNAM
Understanding the CNAM Feature

Figure 4 Calling Name Presentation Private

If the generic number (GN) type of name indicates 1 (name not available), PGW initiates a CNAM database query as defined in the “CNAM Database Query Procedure” section on page 5.

If it is calling name type and the name is available, PGW continues to analyze the presentation field next.

If the GN presentation indicates 11 (no indication) or 10 (blocking toggle), PGW initiates a CNAM database query as defined in the “CNAM Database Query Procedure” section on page 5.

If the received GN presentation is set to 01 (presentation restricted), PGW sends the name "Private" text to the egress trunk.

If the received GN Presentation is set to "presentation allowed", PGW populates the name text based on the received GN characters and sends it to egress trunk.

If the nature of address of the calling party number (CPN) does not indicate "unique/non-unique national number", the call appearance (CA) sends an "out-of-area/unavailable" text to the egress trunk.

GN Parameter NOT included in IAM

- If the (CPN) is received in the IAM, PGW uses it to invoke a name query to an external name database (CNAM/LIDB).
- If it is received but the nature of address of the CPN does not indicate "unique/non-unique national number", then the CA sends an "out-of-area/unavailable" text to the egress trunk.

CNAM Invocation Procedure

Generic Number Parameter Included in Initial Address Message (IAM)

- If the generic number (GN) type of name indicates 1 (name not available), PGW initiates a CNAM database query as defined in the “CNAM Database Query Procedure” section on page 5.
- If it is calling name type and the name is available, PGW continues to analyze the presentation field next.
- If the GN presentation indicates 11 (no indication) or 10 (blocking toggle), PGW initiates a CNAM database query as defined in the “CNAM Database Query Procedure” section on page 5.
- If the received GN presentation is set to 01 (presentation restricted), PGW sends the name "Private" text to the egress trunk.
- If the received GN Presentation is set to "presentation allowed", PGW populates the name text based on the received GN characters and sends it to egress trunk.
- If the nature of address of the calling party number (CPN) does not indicate "unique/non-unique national number", the call appearance (CA) sends an "out-of-area/unavailable" text to the egress trunk.
Understanding the CNAM Feature

- Otherwise, PGW proceeds to query the CNAM/LIDB database as defined in the “CNAM Database Query Procedure” section on page 5.

CNAM Database Query Procedure

When the CA invokes the name query procedure (CNAM DB), it performs the following:

1. CA starts the timer Tname for the name query and initiates the TCAP query.
2. The TCAP Name Query is initiated according to GR-1188:
3. The setting of the name text as a result of the TCAP query is:
   - If the Tname expires before a TCAP response is received, or a TCAP error/reject is received, PGW proceeds with the call termination with the name text set to "out-of-area/unavailable".
   - If the received TCAP GN does not have the "Type of Name" set to 001 (calling name) or the "Availability" is set to 1 (name unavailable), or no name characters are present, then PGW proceeds with the call termination with the name text set to "out-of-area/unavailable". Otherwise PGW continues the following steps.

4. If NO GN was received in the IAM before, the CA uses the received TCAP GN as shown in Table 1.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>No GN Received in IAM Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>TCAP GN Presentation</td>
</tr>
<tr>
<td>00: Permanently presentation allowed</td>
<td>TCAP GN characters</td>
</tr>
<tr>
<td>01: Permanently presentation restricted</td>
<td>&quot;Private&quot;</td>
</tr>
<tr>
<td>10: Blocking toggle</td>
<td>&quot;out-of-area/unavailable&quot;</td>
</tr>
<tr>
<td>11: no indication</td>
<td>&quot;out-of-area/unavailable&quot;</td>
</tr>
</tbody>
</table>

5. If GN was received in the IAM, the CA uses the received TCAP GN as shown in Table 2.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>GN Received in IAM Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>ISDN GN Presentation</td>
</tr>
<tr>
<td>CIDS: Allowed</td>
<td>Allowed</td>
</tr>
<tr>
<td>CIDS: Allowed</td>
<td>Restricted</td>
</tr>
<tr>
<td>CIDS: Allowed</td>
<td>Blocking Toggle</td>
</tr>
<tr>
<td>CIDS: Allowed</td>
<td>No Indication</td>
</tr>
<tr>
<td>CIDS: Restricted</td>
<td>Not Applicable (No Query Generated)</td>
</tr>
<tr>
<td>CNAB: Blocking Toggle</td>
<td>Allowed</td>
</tr>
<tr>
<td>CNAB: Blocking Toggle</td>
<td>Restricted</td>
</tr>
<tr>
<td>CNAB: Blocking Toggle</td>
<td>Blocking Toggle</td>
</tr>
</tbody>
</table>
Understanding the CNAM Feature

Cisco MGC Software Release 9.7(3)

CNAM Presentation

CNAM is inserted as described above in the following interfaces:

- SS7 to SIP call flow: The calling name is inserted in the From and P-Asserted-Identity headers
- SS7 to H.323 call flow: The calling name is inserted into the display information element (IE) of the SETUP message (H.225)

If the calling user dials a CNAB code, the GN parameter is coded as follows:

- The "Type of Name" subfield is coded "001" to indicate "calling name."
- The "Availability" subfield is coded "0" to indicate "name available, or name availability unknown."
- The "Presentation" subfield is coded "10" to indicate "blocking toggle."
- No name characters are expected to be present.

If the calling user dials a CIDS Suppression code, the GN parameter is coded as follows:

- The "Type of Name" subfield is coded "001" to indicate "calling name."
- The "Availability" subfield is coded "0" to indicate "name available, or name availability unknown."
- The "Presentation" subfield is coded "01" to indicate "presentation restricted."
- No name characters are expected to be present.

Prerequisites for Using this Feature

The Cisco PGW 2200 must be running Cisco MGC software Release 9.7(3). Prerequisites for this release can be found in the Release Notes for the Cisco Media Gateway Controller Software Release 9.7(3).

Limitations

The following are limitations of the CNAM feature on the PGW 2200:

- The PGW supports CNAM only in call control mode.

Table 2  

<table>
<thead>
<tr>
<th>ISDN GN Presentation</th>
<th>TCAP GN Presentation</th>
<th>Name Text Sent to Called Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNAB: Blocking Toggle</td>
<td>No Indication</td>
<td>Name: &quot;Out-of-area/Unavailable&quot;</td>
</tr>
<tr>
<td>No Indication (or no ISDNUP GN in IAM)</td>
<td>Allowed</td>
<td>Name: &quot;Out-of-area/Unavailable&quot;</td>
</tr>
<tr>
<td>No Indication (or no ISDNUP GN in IAM)</td>
<td>Restricted</td>
<td>Name: &quot;Private&quot;</td>
</tr>
<tr>
<td>No Indication (or no ISDNUP GN in IAM)</td>
<td>Blocking Toggle</td>
<td>Name: &quot;Out-of-area/Unavailable&quot;</td>
</tr>
<tr>
<td>No Indication (or no ISDNUP GN in IAM)</td>
<td>No Indication</td>
<td>Name: &quot;Out-of-area/Unavailable&quot;</td>
</tr>
</tbody>
</table>
The PGW triggers CNAM service only when the originating call control (OCC) side protocol is ANSI SS7.

CNAM service limitation for call forwarding
The PGW triggers CNAM service once for a call, at most, and can only trigger CNAM service in B number analysis. The CNAM query result is saved in call context.

For example, if the terminating call control (TCC) side tries to forward the call two times by a 302 message, PGW triggers the CNAM service if the following conditions are met:
- The CNAM has not been triggered before. If this is the first forwarding message, the original call does not trigger the CNAM service.
- The new contact in 302 triggers B number analysis. If 302 triggers a new B number analysis, then the PGW triggers CNAM service.

The PGW does not send early address complete message (ACM) back to the OCC side as soon as it triggers the CNAM service.

**Supported Standards, MIBs, and RFCs**

This section identifies the new or modified standards, MIBs, or RFCs that are supported by this feature.

**Standards**
- Telcordia Technologies Generic Requirements GR-1188-CORE

**Related Documents**

This document contains information that is related strictly to this feature. The documents that contain additional information related to the Cisco Media Gateway Controller (MGC) are at the following url:


**Prerequisites for Using This Feature**

The Cisco PGW 2200 must be running Cisco MGC software Release 9.7(3). Prerequisites for this release can be found in the Release Notes for the Cisco Media Gateway Controller Software Release 9.7(3).


**Dial Plan Examples**

Add the CNAM service to inService.dat, route by SSN:

```plaintext
prov-sta::srcver="active",dstver="CNAM",confirm
prov-add:inservice:name="ansi-pre-ain-cnam",skortcv=0,
gtorsn="ROUTEBYSSN",gtformat="NOGT",msname="ansi-pre-ain-cnam"
prov-cpy
```

Add the CNAM service to inService.dat, route by GT:

```plaintext
prov-sta::srcver="active",dstver="CNAM",confirm
```
Provision CNAM service in B number dial plan:

```text
prov-sta::srcver="active",dstver="CNAM",confirm
numan-add:resultset:custgrpid="1111",name="CNAM"
numan-add:resulttable:custgrpid="1111",name="CNAMtrigger",
resulttype="IN_TRIGGER",dw1="30",dw2="0",dw3="0",dw4="6",setname="CNAM"
numan-add:resulttable:custgrpid="1111",name="route",resulttype="ROUTE",
dw1="rtlist1",setname="CNAM"
numan-add:bdigtree:custgrpid="1111",callside="originating",digitstring="2146",setname="CNAM"
```

Enable calling name display in EISUP path and trunkgroup:

```text
prov-add:sigsvcprop:name="EISUP",InhibitOutgoingCallingNameDisplay="0"
prov-add:trnkgrpprop:name="7777",InhibitOutgoingCallingNameDisplay="0"
```

Provision cgpninclude on SIP trunkgroup profile

```text
prov-add:PROFILE:NAME="sippro",TYPE="grprofile",cgpninclud="1"
prov-add:TRNKGRPPROFILE:name="5600",grprofile="sippro"
```

Provision MapCLIToSipHeader on SIP sigpath to map the ISUP CLI to P-Asserted-ID header in addition to From header:

```text
prov-add:sigsvcprop:name="sip-path",mapclitosipheader="3"
```
Billing Interface

This section identifies the call detail record (CDR) data added for this feature. For billing interface information for the rest of the Cisco MGC software, see the Cisco Media Gateway Controller Software Release 9 Billing Interface Guide.

CNAM DIP (Tag: 4240)

Table 3  CNAM DIP

<table>
<thead>
<tr>
<th>Name: CNAM DIP</th>
<th>Tag: 4240</th>
<th>Source: MDL</th>
</tr>
</thead>
</table>

**Description/Purpose:**

1. Indicates whether CNAM is invoked.
2. The query result.

**Format:** Structured variable  
**Length in Octets:** 2

**Data Value:**

Octet 1 query indicator
0= no query
1=query

Octet 2 query result indicator
0=success
1=return error
2=return reject
3=query timeout
4=query abandon

**Extended Data Value:** No extended value.

**General Information:**

**MGC Release:** Release 9.7 or later.

<table>
<thead>
<tr>
<th>Answered (1010)</th>
<th>Deselected (1020)</th>
<th>Aborted (1030)</th>
<th>Release (1040)</th>
<th>Interrupted (1050)</th>
<th>Ongoing (1060)</th>
<th>Maintenance (1070)</th>
<th>External DB (1080)</th>
<th>End of Call (1110)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>

Cisco MGC Software Release 9.7(3)
Calling Name (Tag: 4241)

Table 4 Calling Name

<table>
<thead>
<tr>
<th>Name: Calling Name</th>
<th>Tag: 4241</th>
<th>Source: MDL</th>
</tr>
</thead>
</table>

**Description/Purpose:** The calling party name is gotten from the service control point (SCP) or the original call setup message. The retrieved calling party name is passed to the egress destination if and only if it is allowed, based on CNAB and CIDS information. It is a terminating feature.

**Data Value:** Characters of calling name displayed on the terminating side.

Example: Bob Johnson

**Extended Data Value:** No extended value.

**General Information:**

**MGC Release:** Release 9.7 or later.

---

<table>
<thead>
<tr>
<th>Answered (1010)</th>
<th>Deselected (1020)</th>
<th>Aborted (1030)</th>
<th>Release (1040)</th>
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<th>Maintenance (1070)</th>
<th>External DB (1080)</th>
<th>End of Call (1110)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
</tbody>
</table>

---

Result Type Definitions

The IN_TRIGGER result type is modified for this feature.

Table 5 New Result Type Definition

<table>
<thead>
<tr>
<th>Result Number</th>
<th>Result Type</th>
<th>Dataword1</th>
<th>Dataword2</th>
<th>Dataword3</th>
<th>Dataword4</th>
<th>Analysis Points</th>
<th>Result Type Valid For</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>IN_TRIGGER</td>
<td>Service type</td>
<td>Scp/stp index</td>
<td>Min digits req</td>
<td>Timer</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

- Dataword1 is the TCAP trigger service value (30). The value of this is listed in inService.dat. This value is an indication of the type of IN service that needs to be invoked.
- Dataword2 is the scp/stp index used in the trigger module for selection of the SCP for TCAP query.
- Dataword3 is the minimum number of digits (0 through 32) required to be received to support further analysis.
- Dataword4 is the timer value (1 through 30), in seconds, used to identify short duration calls.

The global title translation type is configurable, the default value is 5. You can change this in trigger.dat under the “etc” directory. This parameter takes effect only after you restart the PGW.
Troubleshooting the CNAM Feature

The following documents contain information to help you troubleshoot the TCAP query:

- **PGW 2200 Softswitch TCAP Release 9.3 and Later**

- Cisco Media Gateway Controller Software Release 9 Operations, Maintenance, and Troubleshooting Guide

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly What's New in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation at:


This document is to be used in conjunction with the documents listed in the Related Documents section.

Glossary

Table 6 contains expansions of acronyms and technical terms used in this feature module.

**Table 6  Acronyms and Expansions**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Expansion</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACM</td>
<td>Address Complete Message</td>
</tr>
<tr>
<td>ANSI</td>
<td>American National Standards Institute</td>
</tr>
<tr>
<td>CA</td>
<td>Call Appearance</td>
</tr>
<tr>
<td>CDR</td>
<td>Call Detail Record</td>
</tr>
<tr>
<td>CIDS</td>
<td>Calling Identity Delivery and Suppression</td>
</tr>
<tr>
<td>CNAB</td>
<td>Calling Name Delivery Blocking</td>
</tr>
<tr>
<td>CNAM</td>
<td>Calling Name Delivery</td>
</tr>
<tr>
<td>CPN</td>
<td>Calling Party Number</td>
</tr>
<tr>
<td>DPNSS</td>
<td>Digital private network signaling system</td>
</tr>
<tr>
<td>EISUP</td>
<td>Enhanced ISUP</td>
</tr>
<tr>
<td>GN</td>
<td>Generic Number</td>
</tr>
<tr>
<td>IAM</td>
<td>Initial Address Message</td>
</tr>
<tr>
<td>IE</td>
<td>Information Element</td>
</tr>
</tbody>
</table>
### Table 6  Acronyms and Expansions

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Expansion</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISUP</td>
<td>ISDN User Part</td>
</tr>
<tr>
<td>LIDB</td>
<td>Line Information Database</td>
</tr>
<tr>
<td>MGC</td>
<td>Media Gateway Controller</td>
</tr>
<tr>
<td>MML</td>
<td>Man-Machine Language</td>
</tr>
<tr>
<td>OCC</td>
<td>Originating Call Control</td>
</tr>
<tr>
<td>PGW</td>
<td>PSTN gateway</td>
</tr>
<tr>
<td>SIP</td>
<td>Session Initiation Protocol</td>
</tr>
<tr>
<td>TCAP</td>
<td>Transaction Capabilities Application Part</td>
</tr>
<tr>
<td>TCC</td>
<td>Terminating Call Control</td>
</tr>
</tbody>
</table>

Any Internet Protocol (IP) addresses used in this document are not intended to be actual addresses. Any examples, command display output, and figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses in illustrative content is unintentional and coincidental.

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