

# Cisco PGW 2200 SS7 Continuity Testing

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## Introduction

This document explains how Continuity Testing (COT) works for the Cisco PGW 2200 in configured signaling mode. COT is an automated diagnostic procedure performed in the Signaling System 7 (SS7) Public Switched Telephone Network (PSTN) between switches to ensure that circuits are in service and not experiencing excessive signal loss. This validation is performed by sending tones across the bearer channel. It is performed on a sampling basis. For instance, on 10 percent of the calls (in the Cisco PGW 2200, the sampling rate is defined by `CotPercentage`).

## Prerequisites

### Requirements

Readers of this document should have knowledge of these topics:

- [Cisco Media Gateway Controller Release 7](#)
- [Cisco Media Gateway Controller Release 9](#)
- [Continuity Testing](#)
- COT SS7 - ISUP timers (refer to [ITU Q.704](#) - Section 16.8 for further explanation).
- COT testing - See [ITU Q.784](#) - Section 1.4.x Continuity check test call and Section 6.1.x Continuity check call.
- COT SS7 - Application of the ISDN user part of CCITT Signalling System No. 7 for international ISDN interconnections ( see [Q.767](#) ).
- GR-246-CORE Annex B - Explains Tone Generation Accuracy, COT detection, Tone interruptions, Tone end recognition time, and Tone recognition time

### Components Used

The information in this document is based on the Cisco PGW 2200 Softswitch.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## Conventions

For more information on document conventions, refer to the [Cisco Technical Tips Conventions](#).

## Background Information

Since the bearer path is distinct from the signaling path, SS7 requires specific means to validate the bearer channel before the call is established.

COT is requested by the Cisco PGW 2200 originating as an IAM request or as a separate SS7 ISUP message using the Continuity Check Request (CCR) or Circuit Reservation Message (CRM). Two types of COT are Loopback and Transponder (Tone check) methods (see the [table](#)). The destination Cisco PGW 2200 places the related circuit in either Loopback mode 2010 Hz or in Transponder mode 1780 Hz (see the [table](#)). The Loopback form of COT is used on 4-wire trunks. In the 2-wire case, when the originating switch sends a tone, the receiving switch sends a different frequency tone in response. This is the Transponder mode of COT. If the circuit testing fails during COT, alarm information is generated allowing diagnostic software to busy out the trunk, which can be checked with the man-machine language (MML) command **rtrv-alm**s. Calls are prevented from being routed to the circuit and are COT failed.

COT Type (Loop and/or Tone) NI2+	Tones Rx	Tones Tx
Loop	2010	2010
Tone	1780	2010

## Cisco PGW 2200 - SS7 COT Configuration and Troubleshooting in Signaling Mode

The Cisco PGW2200 software application performs the signaling and/or call control tasks. This section will talk about the signaling mode. The Cisco PGW 2200 sends NI2+ commands to NAS to transmit and detect tones or loopback circuit.

- Termination - The Cisco PGW 2200 receives an IAM, CCR or CRM indicating that COT is required. Single Tone (Loop)
- Origination - The Cisco PGW 2200 sends an IAM, CCR, or CRM indicating that COT is required. Single Tone (Loop) Percentage Based (0 - 100%)
- The Cisco PGW 2200 MML **tst-cot** command.

## SS7 COT Working

Look at an SS7 sniffer trace (Cisco Sniffer PT-MTC) for an SS7 IAM message. This is used to

check the message into the IAM on CONTINUITY CHECK IND which has a value equal to 1. This indicates that you need to do a CCR required on this circuit.

**Note:** No test is performed in case the value equals 0 (0 Continuity\_check\_not\_required).

```
ISUP. -> IAM (01) CIC=0001
*****
CIC 1
MESSAGE TYPE 0x01 IAM - Initial_Address_Msg
NATURE_OF_CONNECTION 0x06
LENGTH: 0x01 FIXED DATA 0x08
SATELLITE IND 0 no_satellite_circuit_in_connection
CONTINUITY CHECK IND 1 Continuity_check_required_on_this_circuit

<snip>

***** END_OF_MSG *****

14:37:21.854899 10.15.13.6:3001 10.15.13.132:3001
NMM..... -> NSCMD_REQ (03) PROT:43
OPER: COT_TP_IN (04)
IN_TONE: 218 OUT_TONE: 218
14:37:21.865164 10.15.13.132:3001 10.15.13.6:3001
NMM..... -> NSCMD_RES (02) PROT:43
OPER: COT_TP_IN (04) RESULT: SUCCESSFUL (02)
14:37:23.796451 214-110-005 214-110-035 ITU ISUP. -> COT (05) CIC=0001
SLS=123 Pr:2 Ni:NTL

***** DETAIL *****
```

You can check the status on the network access server (NAS) ISDN interface channel using the command **show isdn service**. You can also check the status of the B-channel which is currently sending the COT testing into state 5 [ Maitenance Pending].

```
nas#show isdn service 2
PRI Channel Statistics:
ISDN Se2:23 SC, Channel [1-24]
Configured Isdn Interface (dsl) 2
Channel State (0=Idle 1=Proposed 2=Busy 3=Reserved 4=Restart 5=Maint_Pend)
Channel : 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
State : 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Service State (0=Inservice 1=Maint 2=Outofservice)
Channel : 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
State : 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Channel blocked? (0=No 1=Yes)
Channel : 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

## SS7 COT Configuration on the Cisco PGW 2200

If you want to check the configuration using MML, run the command **prov-rtrv:sigsvccprop** to find out the COT settings. You need to edit the properties.dat using MML commands to set-up the method (Loop or Tone) and tones (2010 and 1780) correctly.

```
PGW2200a mml>prov-rtrv:sigsvccprop:name="ss7path"
```

```

MGC-01 - Media Gateway Controller 2004-01-28 18:07:36.727 MET
M RTRV
"session=cot11:sigsvccprop"
/*
ACCRspCatName = default
ACCRspCntlInhibit = 0
ACLDur = 5
ADigitCCPrefix = 0
AInternationalPrefix = NULL
ANationalPrefix = NULL
<snip>

COLDefaultAllowed = 0
CotInTone = 2010
CotOutTone = 2010
CotPercentage = 0
EchoCanRequired = 0
ExtCOT = Loop

<snip>
Info: Percentage (0-100) is the percentage of the trunk group COT has passed

```

**Note:** In general, MML commands are not case sensitive (**ExtCOT** is an example of a case-sensitive command). However, property values are case sensitive.

To change the value:

```

PGW2200a mml>prov-sta::srcver="active",dstver="cot11"
MGC-01 - Media Gateway Controller 2004-01-28 18:05:49.681 MET
M COMPLD
"PROV-STA"
;
PGW2200a mml>prov-ed: sigsvccprop:name="ss7path",ExtCOT="Loop"
MGC-01 - Media Gateway Controller 2004-01-28 18:11:34.972 MET
M COMPLD
"sigsvccprop:
WARNING: Restart may be needed based on the property(s) added/modified.
Refer to MGC Provisioning Guide."
;
PGW2200a mml>prov-ed: sigsvccprop:name="ss7path",CotInTone="2010"
MGC-01 - Media Gateway Controller 2004-02-03 16:51:50.233 MET
M COMPLD
"sigsvccprop:
WARNING: Restart may be needed based on the property(s) added/modified.
Refer to MGC Provisioning Guide."
;
PGW2200a mml>prov-cpy or prov-dply

```

**Note:** The two values that are provisionable are 1780 and 2010 for the COT tones. [Table 4-4: Provisionable Properties](#) lists the properties that can be provisioned and indicates if the modified property value takes effect without stopping and restarting the Media Gateway Controller software.

On the NAS, no COT configuration task is requested. Please be aware that for Nailed solution you are using ISDN switch-type **isdn switch-type primary-ni2c** between the PGW 2200 and NAS.

## SS7 COT Troubleshooting on the Cisco PGW 2200 in Signaling Mode

If you run into a COT test failure, this can be viewed on the Cisco PGW 2200 in a variety of ways.

The simplest is to use the MML utility and the MML command **rtrv-alm:cont** to receive continuous alarm updates.

```
PGW2200a mml>rtrv-alm:cont
Virtual Switch Controller 2003-12-20 091938
M RTRV
;
Virtual Switch Controller 2003-12-20 092041.308
A "dpc-ss7ALM=\\"ISUP COT FAILURE
;
Virtual Switch Controller 2003-12-20 092043.488
A "dpc-ss7ALM=\\"ISUP COT FAILURE
;
```

1. Clear alarms using the MML command **clr-alm:<comp>:"<alm cat>"**. **Note:** From Cisco PGW 2200 release 9.4(1) **clr-alm** is removed from the MML command (refer to Cisco bug ID [CSCdy63984](#) ([registered](#) customers only) for further information). You can first retrieve the current alarm status using **rtrv-alm**. Entering **help** at the `mml>` prompt provides you with a listing of all MML commands.
2. Attempt to put the Circuit Identification Code (CIC) back into service (the remote end may not comply). On the Cisco PGW 2200, use the MML command **unblk-cic:<point code>:CIC=<number>**. You can then retrieve the CIC status by using the MML command **rtrv-cic:<point code>:CIC=<number>** or use the **rtrv-tc:all** command. On the NAS, use the configuration command **isdn service dsl <dsl #> b\_channel <channel #> state <0 = In service>** available under the **interface Serial0:15** interface command. You can then retrieve the B-channel status using the **show isdn service** command at the console log. For example:

```
AS5300(config-if)#isdn service dsl 0 b_channel 1 state 0
```

3. Next, you can also run a manual COT testing again. Manual COT tests can be initiated on the Cisco PGW 2200 without requiring the SS7 network to initiate a COT test. For example, on PGW2200a:

```
mml> tst-cot:<point code>:CIC=<number>
```

If you run into COT problems, issue the **debug isdn q931** command on the NAS, as shown in this figure. This figure explains the MML **tst-cot** command and the CCR sent out to the SS7, including the **debug isdn q931** command output.

## SS7 COT Troubleshooting on the Cisco PGW 2200 in Call Control

This section contains the MGCP COT callflow for the PGW 2200 Call Control situation. The Media Gateway Control Protocol (MGCP) organizes the communication between a Media Gateway controller [Cisco PGW2200] and a Media Gateway [Cisco AS5xxx]. This section shows Cisco snoop trace detail for a hairpinning call with loopback COT' and a manual MML cot test from the PGW 2200.

In this figure, COT is initiated by the PSTN switch that sends the IAM request. This PSTN switch reports the test result using a SS7 COT message if successful or a SS7 Release message if failed. The Cisco PGW 2200 puts the related circuit either in loopback mode or in transponder mode. The Cisco PGW 2200 that receives an IAM requesting COT (or a CCR message) first checks for the ExtCOT parameter in the `/opt/CiscoMGC/etc/properties.dat` file.

## Hairpinning Call Example with Loopback COT

Upon receipt of the SS7 IAM message with the `CONTINUITY_CHECK_IND = 1` which means `Continuity_check_required_on_this_circuit`, the PGW 2200 recognizes that a continuity test has been requested. It immediately sends a CRCX CreateConnection message to the Cisco Gateway with a `M: loopback` to put a loopback on the incoming trunk.

```
16:41:04.349197 1-021-1[02217] 1-003-1[02073] ITU ISUP. -> IAM (01)
CIC=00093 CDPN=52929728 CGPN=3600
SLS=11 Pr:0
Ni:NTL
```

```
***** DETAIL *****
CIC 93
MESSAGE TYPE 0x01 IAM - Initial_Address_Msg
NATURE_OF_CONNECTION 0x06
LENGTH: 0x01 FIXED DATA 0x04
SATELLITE_IND 0 no_satellite_circuit_in_connection
CONTINUITY_CHECK_IND 1 Continuity_check_required_on_this_circuit
ECHO_SUPPRESSOR_IND 0 outgoing_half_echo_suppressor_not_included
FORWARD_CALL_IND. 0x07
LENGTH: 0x02 FIXED DATA 0x28 0x01
NATL/INTL_CALL_IND 0 incoming_national_call
END-TO-END_METHOD_IND 0 no_end_to_end_method_available
INTERWORKING_IND 1 interworking_encountered
END-TO-END_INFO_IND 0 no_end_to_end_information_available
ISUP_IND. 1 ISUP_used_all_the_way
ISDN_PREFERENCE_IND 0 isdn_up_pref_all_the_way
ISDN_ACCESS_IND. 1 originating_access_ISDN
SCCP_Method 0 no_indication
CALLING_PARTYS_CATEGORY 0x09
LENGTH: 0x01 FIXED DATA 0x00
CALLING_PARTYS_CATEGORY 0 Partys_Category_unknown_default
TRANSMISSION_MEDIUM_REQUIRED 0x02
LENGTH: 0x01 FIXED DATA 0x03
TRANSMISSION_MEDIUM_REQUIRED 3 3_1_kHz_audio
INDEX_TO_CALLED_PTY_ADDRESS 0x02
INDEX_TO_OPTIONAL_PART 0x08
CALLED_PARTY_NUMBER_PARM 0x04
LENGTH: 0x06 VAR. DATA 0x01 0x13 0x25 0x29 0x79 0x82
ODD/EVEN_IND 0 even_number_of_digits
NATURE_OF_ADDRESS_IND 0x01 subscriber_number
INTERNAL_NETWORK_PARM 0 routing_to_internal_network_number_allowed
NUMBERING_PLAN 1 ISDN_Telephony_Numbering_Plan
DIGITS: 52929728
OPTIONAL_PARAMETERS:
CALLING_PARTY_ADDRESS 0x0A
LENGTH: 0x04 OPT. DATA 0x03 0x17 0x63 0x00
ODD/EVEN_IND 0 even_number_of_digits
NATURE_OF_ADDRESS_IND 0x03 unique_national_number
NUMBER_INCOMPLETE_IND. 0 complete
PRESENTATION_IND. 1 address_presentation_restricted
SCREENING_IND. 3 network_provided
NUMBERING_PLAN 1 ISDN_Telephony_Numbering_Plan
DIGITS: 3600
END_OF_OPTIONAL_PARAMETERS 0x00
***** END_OF_MSG *****
```

```
16:41:04.380800 10.48.84.25:2427 10.48.84.26:2427 MGCP..... -> CRCX 411
s3/ds1-1/31@v5350-3.cisco.com MGCP 0.1
```

e:off,fxr/fx:t38-loose

C: 39

L:

**M: loopback**

R:

S:

X: 19A

The Cisco gateway acknowledges [200 OK] the CRCX messages of the connection, and sends back the identification of the newly created connection and the session description used to receive audio data:

```
16:41:04.406307 10.48.84.26:2427 10.48.84.25:2427 MGCP..... -> 200 411 OK
I: 2
v=0
o=- 2 0 IN
IP4 10.48.84.26
s=Cisco SDP
0
c=IN IP4
10.48.84.26
t=0 0
m=audio
17906 RTP/AVP 0 8 99 101 2 102 4 103 104 105 106 18 0 125 100
a=rtpmap:99
G.726-16/8000
a=rtpmap:101
G.726-24/8000
a=rtpmap:102
G.723.1-H/8000
a=rtpmap:103
G.723.1-L/8000
a=rtpmap:104
G.729b/8000
a=rtpmap:105
G.723.1a-H/8000
a=rtpmap:106
G.723.1a-L/8000
a=rtpmap:125
G.nX64/8000
a=rtpmap:100
X-NSE/8000
a=fmtp:100
200-202
a=X-sqn:0
a=X-cap: 1
audio RTP/AVP 100
a=X-cpar:
a=X-cpar:
a=X-cap: 2
a=rtpmap:100 X-NSE/8000
a=fmtp:100 200-202
image udpt1 t38
16:41:04.430601 10.48.84.25:2427 10.48.84.26:2427 MGCP..... -> CRCX 412
s3/ds1-0/9@v5350-3.cisco.com MGCP 0.1
C: 39
L:
e:off,fxr/fx:t38-loose,nt:LOCAL
M: sendrecv
16:41:04.433474 10.48.84.26:2427 10.48.84.25:2427 MGCP..... -> 200 412 OK
I: 3
v=0
```

```

LOCAL EPN S3/DS1-0/9
0
S3/DS1-0/9

LOCAL 0
16:41:05.354843 1-021-1[02217] 1-003-1[02073] ITU ISUP. -> COT (05)
CIC=00093
Ni:NTL
SLS=11 Pr:0
o=- 3 0
s=Cisco SDP
c=LOCAL EPN
t=0 0
m=audio 0

```

The COT passes and the PSTN sends a "continuity passed" message (COT). The PGW 2200 then sends a modify connection message to the Cisco gateway.

```

***** DETAIL *****
CIC 93
MESSAGE TYPE 0x05 COT - Continuity_Msg
CONTINUITY_IND. 1 continuity_check_successful
***** END_OF_MSG *****

```

```

16:41:05.370661 10.48.84.25:2427 10.48.84.26:2427 MGCP..... -> MDCX 414
s3/ds1-1/31@v5350-3.cisco.com MGCP 0.1
C: 39
I: 2
L:
e:off,nt:LOCAL
M: sendrecv
R:
S:
X: 19D
v=0
o=- 3 0

```

```

LOCAL EPN S3/DS1-0/9
0
S3/DS1-0/9

LOCAL 0
16:41:05.371148 1-003-1[02073] 1-010-1[02129] ITU ISUP. -> IAM (01)
CIC=00040 CDPN=929728F CGPN=3600
Ni:NTL
SLS=08 Pr:0

```

```

***** DETAIL *****
CIC 40
MESSAGE TYPE 0x01 IAM - Initial_Address_Msg
NATURE_OF_CONNECTION 0x06
LENGTH: 0x01 FIXED DATA 0x00
SATELLITE_IND 0 no_satellite_circuit_in_connection
CONTINUITY_CHECK_IND 0 Continuity_check_not_required
ECHO_SUPPRESSOR_IND 0 outgoing_half_echo_suppressor_not_included
FORWARD_CALL_IND. 0x07
LENGTH: 0x02 FIXED DATA 0x28 0x01
NATL/INTL_CALL_IND 0 incoming_national_call
END-TO-END_METHOD_IND 0 no_end_to_end_method_available
INTERWORKING_IND 1 interworking_encountered

```



```

END-TO-END INFO IND          0 no_end_to_end_information_available
ISUP IND.                    1 ISUP_used_all_the_way
ISDN PREFERENCE IND          0 isdn_up_pref_all_the_way
ISDN ACCESS IND.            1 originating_access_ISDN
SCCP Method                  0 no indication
CALLING PARTYS CATEGORY      0x09
  LENGTH:                    0x01 FIXED DATA 0x00
  CALLING PARTYS CATEGORY      0 Partys_Category_unknown_default
TRANSMISSION MEDIUM REQUIRED  0x02
  LENGTH:                    0x01 FIXED DATA 0x03
  TRANSMISSION MEDIUM REQUIRED  3 3_1_kHz_audio
INDEX TO CALLED PTY ADDRESS  0x02
INDEX TO OPTIONAL PART       0x08
CALLED PARTY NUMBER PARM     0x04
  LENGTH:                    0x06 VAR.  DATA 0x81 0x10 0x29 0x79 0x82 0x0F
  ODD/EVEN IND                1 odd_number_of_digits
  NATURE OF ADDRESS IND       0x01 subscriber_number
  INTERNAL NETWORK PARM       0 routing to internal network number allowed
  NUMBERING PLAN              1 ISDN_Telephony_Numbering_Plan
  DIGITS:                    929728F
  EXTENSION DIGIT            F -ST
OPTIONAL PARAMETERS:
CALLING PARTY ADDRESS        0x0A
  LENGTH:                    0x04 OPT.  DATA 0x03 0x17 0x63 0x00
  ODD/EVEN IND                0 even_number_of_digits
  NATURE OF ADDRESS IND       0x03 unique_national_number
  NUMBER INCOMPLETE IND.      0 complete
  PRESENTATION IND.          1 address_presentation_restricted
  SCREENING IND.             3 network_provided
  NUMBERING PLAN              1 ISDN_Telephony_Numbering_Plan
  DIGITS:                    3600
RESERVED/UNKNOWN OPT PARM    0x3D
  LENGTH:                    0x01 OPT.  DATA 0x1F
RESERVED/UNKNOWN OPT PARM    0x39
  LENGTH:                    0x02 OPT.  DATA 0x3D 0xC0
END OF OPTIONAL PARAMETERS    0x00
***** END_OF_MSG *****

```

```

16:41:05.372707 10.48.84.26:2427 10.48.84.25:2427 MGCP..... -> 200 414 OK
v=0
o=- 2 1
LOCAL EPN S3/DS1-1/31
s=Cisco SDP
0
c=LOCAL EPN
S3/DS1-1/31
t=0 0
m=audio 0
LOCAL 0
16:41:05.623454 1-010-1[02129] 1-003-1[02073] ITU ISUP. -> ACM (06)
CIC=00040
SLS=08 Pr:0
Ni:NTL

```

```

***** DETAIL *****
CIC 40
MESSAGE TYPE 0x06 ACM - Address_Complete_Msg
BACKWARD CALL IND 0x11
  LENGTH: 0x02 FIXED DATA 0x02 0x14
  CHARGE IND 2 charge
  CALLED PTYS STATUS IND 0 no_indication_default
  CALLED PARTYS CATEGORY 0 no_indication_default
  END-TO-END METHOD IND 0 no_end_to_end_method_available

```

```

INTERWORKING IND          0 no_interworking_encountered
END-TO-END INFO IND      0 no_end_to_end_information_available
ISUP IND.                1 ISUP_used_all_the_way
REVERSE HOLDING IND      0 reverse_holding_not_required
ISDN ACCESS IND.        1 terminating_access_ISDN
INDEX TO OPTIONAL PART    0x01
OPTIONAL PARAMETERS:
OPTIONAL BACKWARD CALL IND 0x29
  LENGTH:                 0x01 OPT.  DATA 0x01
  FORWARDING IND          0 no_indication
  INBAND INFO IND         1 inband_information
  SIMPLE SEGMENTATION     0 no additional information will be sent
  NET EXCESSIVE DELAY     0 no_indication
  USER NETWORK INTERACTION 0 no_indication
END OF OPTIONAL PARAMETERS 0x00
*****                      END_OF_MSG                      *****

```

```

16:41:05.640586 10.48.84.25:2427 10.48.84.26:2427 MGCP..... -> MDCX 416
s3/ds1-0/9@v5350-3.cisco.com MGCP 0.1

```

```

C: 39
I: 3
L:

```

e:off,nt:LOCAL

```

M: sendrecv
R:
X: 19F
v=0
o=- 2 1

```

LOCAL EPN S3/DS1-1/31

0

```

s=Cisco SDP
c=LOCAL EPN

```

S3/DS1-1/31

```

t=0 0
m=audio 0

```

LOCAL 0

```

16:41:05.642898 10.48.84.26:2427 10.48.84.25:2427 MGCP..... -> 200 416 OK
v=0
o=- 3 1

```

LOCAL EPN S3/DS1-0/9

0

```

s=Cisco SDP
c=LOCAL EPN

```

S3/DS1-0/9

```

t=0 0
m=audio 0

```

LOCAL 0

```

16:41:05.660510 1-003-1[02073] 1-021-1[02217] ITU ISUP. -> ACM (06)
CIC=00093

```

SLS=11 Pr:0

Ni:NTL

\*\*\*\*\* DETAIL \*\*\*\*\*

```

CIC          93
MESSAGE TYPE 0x06 ACM - Address_Complete_Msg
BACKWARD CALL IND 0x11
  LENGTH:    0x02 FIXED DATA 0x02 0x14
  CHARGE IND 2 charge
  CALLED PTYS STATUS IND 0 no_indication_default
  CALLED PARTYS CATEGORY 0 no_indication_default
  END-TO-END METHOD IND 0 no_end_to_end_method_available
  INTERWORKING IND 0 no_interworking_encountered
  END-TO-END INFO IND 0 no_end_to_end_information_available

```

```

ISUP IND.                1 ISUP_used_all_the_way
REVERSE HOLDING IND      0 reverse_holding_not_required
ISDN ACCESS IND.        1 terminating_access_ISDN
INDEX TO OPTIONAL PART   0x01
OPTIONAL PARAMETERS:
OPTIONAL BACKWARD CALL IND 0x29
  LENGTH:                0x01 OPT.  DATA 0x01
  FORWARDING IND         0 no_indication
  INBAND INFO IND        1 inband_information
  SIMPLE SEGMENTATION    0 no additional information will be sent
  NET EXCESSIVE DELAY    0 no_indication
  USER NETWORK INTERACTION 0 no_indication
END OF OPTIONAL PARAMETERS 0x00
*****                      END_OF_MSG                      *****

```

```

16:41:15.384246 1-010-1[02129]      1-003-1[02073]      ITU ISUP. -> ANM (09)
CIC=00040

```

SLS=08 Pr:0

Ni:NTL

```

***** DETAIL *****
CIC                        40
MESSAGE TYPE               0x09 ANM - Answer_Msg
INDEX TO OPTIONAL PART     0x01
OPTIONAL PARAMETERS:
BACKWARD CALL IND         0x11
  LENGTH:                 0x02 OPT.  DATA 0x02 0x04
  CHARGE IND              2 charge
  CALLED PTYS STATUS IND  0 no_indication_default
  CALLED PARTYS CATEGORY  0 no_indication_default
  END-TO-END METHOD IND    0 no_end_to_end_method_available
  INTERWORKING IND        0 no_interworking_encountered
  END-TO-END INFO IND     0 no_end_to_end_information_available
  ISUP IND.               1 ISUP_used_all_the_way
  REVERSE HOLDING IND     0 reverse_holding_not_required
  ISDN ACCESS IND.        0 terminating_access_non_ISDN
ACCESS TRANSPORT          0x03
  LENGTH:                 0x04 OPT.  DATA 0x1E 0x02 0x81 0x82
END OF OPTIONAL PARAMETERS 0x00
*****                      END_OF_MSG                      *****

```

```

16:41:15.492711 1-003-1[02073]      1-021-1[02217]      ITU ISUP. -> ANM (09)
CIC=00093

```

SLS=11 Pr:0

Ni:NTL

```

***** DETAIL *****
CIC                        93
MESSAGE TYPE               0x09 ANM - Answer_Msg
INDEX TO OPTIONAL PART     0x01
OPTIONAL PARAMETERS:
BACKWARD CALL IND         0x11
  LENGTH:                 0x02 OPT.  DATA 0x02 0x04
  CHARGE IND              2 charge
  CALLED PTYS STATUS IND  0 no_indication_default
  CALLED PARTYS CATEGORY  0 no_indication_default
  END-TO-END METHOD IND    0 no_end_to_end_method_available
  INTERWORKING IND        0 no_interworking_encountered
  END-TO-END INFO IND     0 no_end_to_end_information_available
  ISUP IND.               1 ISUP_used_all_the_way
  REVERSE HOLDING IND     0 reverse_holding_not_required
  ISDN ACCESS IND.        0 terminating_access_non_ISDN

```

```

ACCESS TRANSPORT          0x03
  LENGTH:                 0x04 OPT.  DATA 0x1E 0x02 0x81 0x82
END OF OPTIONAL PARAMETERS 0x00
*****                    END_OF_MSG                    *****

```

You also can run the MML **tst-cot** command to execute a continuity test on a specified remote switch circuit.

- **Format:** `tst-cot:<sig path>:CIC=<number>`
- **Description:** \* `sig path`—MML component name of a provisioning component signal path.\*  
`CIC=<number>`—A numeric value which identifies the ISUP circuit identification code number.

For example, this MML command executes a continuity test on `c7srv-bru7` for `CIC-2`:

```

PGW2200a mml>tst-cot:c7srv-bru7:cic=2
MGC-01 - Media Gateway Controller 2002-09-19 13:26:51.530 WET
M RTRV
SCNF
"c7srv-bru7"
/* Passed */
;
PGW2200a mml>

```

From the MGCP **CRCX** message, you can see the `co1` of 2010 Hz or [`co2` of 1780 Hz].

```

-----
MESSAGES DISPLAY
-----

Time stamp      Orig IP address  Dest IP address  Prot      Msg  Data
-----

13:26:48.590752 10.48.84.128:2427 10.48.84.110:2427  MGCP..... ->  CRCX 12587
s6/ds1-2/2@vsig5400-a2.cisco.com MGCP 0.1

C: 1AF
L: e:off
M: recvonly
R: T/co1(N)
S: T/co1
X: 312A

13:26:51.050405 10.48.84.128:2427 10.48.84.110:2427  MGCP..... ->  CRCX 12587
s6/ds1-2/2@vsig5400-a2.cisco.com MGCP 0.1

C: 1AF
L: e:off
M: recvonly
R: T/co1(N)
S: T/co1
X: 312A

13:26:51.096961 10.48.84.110:2427 10.48.84.128:2427  MGCP..... ->  200 12587 OK
I: D
v=0
o=- 13 0 IN

IP4 10.48.84.110

0

10.48.84.110

s=Cisco SDP
c=IN IP4

```

```

t=0 0
m=audio

19198 RTP/AVP 18 0 8 101 102 2 103 4 104 105 106 107 125
99
a=rtpmap:101
G726-16/8000
a=rtpmap:102
G726-24/8000
a=rtpmap:103
G7231-H/8000
a=rtpmap:104
G7231-L/8000
a=rtpmap:105
G729b/8000
a=rtpmap:106
G7231a-H/8000
a=rtpmap:107
G7231a-L/8000
a=rtpmap:125
GnX64/8000
a=rtpmap:99
telephone-event/8000
a=fmtp:99 0-
15
a=X-sqn:0
a=X-cap: 1

image udptl t38
13:26:51.120463 3-005-2[06186] 3-005-1[06185] ITU ISUP. -> CCR (11)
CIC=00002
SLS=02 Pr:0

Ni:NTL
13:26:51.517150 10.48.84.110:2427 10.48.84.128:2427 MGCP..... -> NTFY 4
s6/ds1-2/2@vsig5400-a2.cisco.com MGCP 0.1
X: 312A
O: T/co1

13:26:51.531608 3-005-2[06186] 3-005-1[06185] ITU ISUP. -> REL (0c)
CIC=00002 Cause 16 = Normal Call Clearing
SLS=02 Pr:0

Ni:NTL
13:26:51.531939 10.48.84.128:2427 10.48.84.110:2427 MGCP..... -> 200 4 OK
C: 1AF

13:26:51.532220 10.48.84.128:2427 10.48.84.110:2427 MGCP..... -> DLCX 12589
s6/ds1-2/2@vsig5400-a2.cisco.com MGCP 0.1
C: 1AF
I: D
R:
S:
X: 312C

13:26:51.577503 10.48.84.110:2427 10.48.84.128:2427 MGCP..... -> 250 12589 OK
P: PS=0,

OS=0, PR=0, OR=0, PL=0, JI=0, LA=0
13:26:51.652675 3-005-1[06185] 3-005-2[06186] ITU ISUP. -> RLC (10)
CIC=00002
SLS=02 Pr:0

Ni:NTL

```

**Note:** Continuity test is not part of the UK ISUP V3 and COT message is not a valid message for this protocol.

## Related Information

- [Tech Notes for the PGW 2200](#)
- [Configuration Examples for the PGW 2200](#)
- [Voice Technology Support](#)
- [Voice and IP Communications Product Support](#)
- [Troubleshooting Cisco IP Telephony](#)
- [Technical Support - Cisco Systems](#)