PGW 2200 Softswitch 'Bearer Capability Not Implemented' Cause Value

Contents

Introduction

This document provides information for the disconnect cause value `Bearer Capability not implemented` on the Cisco PGW 2200. This document specifically applies to the Cisco SS7 Interconnect for Voice/Data Gateways Solution.

Prerequisites

Requirements

Readers of this document should have knowledge of this topic:

- Knowledge of Cisco Media Gateway Controller Software Release 9

Components Used

The information in this document is based on Cisco PGW 2200 Software Releases 7.x and 9.x.

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.

'Bearer Capability not Available' Description

You experience the `Cause i = 0x80BA - Bearer capability not available` disconnect value when the Cisco IOS® command **isdn incoming-voice modem** is not activated under the **interface Serial0:x**.

Note: Some of the lines in this command output have been brought down to a second line for spatial reasons.

```
Time stamp   Orig IP address   Dest IP address  Prot   Msg  Data
------------------------------------------------------------------------
*****************************************************************
* 03 SNOOPER INFO: Snooper is listening on interface "hme1".... *
*****************************************************************
14:07:33.450567  1-002-1[02065]   1-010-1[02129]  ITU  ISUP. -> IAM (01) CIC=00062
                                                      CDPN=1492169679F CGPN=9678
                                                       SLS=14 Pr:0 Ni:NTL

******************************** DETAIL *********************************
CIC                            62
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 0x20 0x01
   NATL/INTL CALL IND             0 incoming_national_call
   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
   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 0x0A
   CALLING PARTYS CATEGORY        10 ordinary_subscriber_precedence_level_1
TRANSMISSION MEDIUM REQUIRED   0x02
   LENGTH:                        0x01 FIXED DATA 0x00
   TRANSMISSION MEDIUM REQUIRED   0 speech
INDEX TO CALLED PTY ADDRESS    0x02
INDEX TO OPTIONAL PART         0x0A
CALLED PARTY NUMBER PARM       0x04
   LENGTH:                        0x08 VAR.  DATA 0x82 0x90 0x41 0x29 0x61 0x69 0x97
0x0F
   ODD/EVEN IND                   1 odd_number_of_digits
   NATURE OF ADDRESS IND          0x02 Called_reserved_for_national_use
   INTERNAL NETWORK PARM          1 routing to internal network number not allowed
   NUMBERING PLAN                 1 ISDN_Telephony_Numbering_Plan
   DIGITS:                        1492169679F
   EXTENSION DIGIT                F -ST
OPTIONAL PARAMETERS:
CALLING PARTY ADDRESS          0x0A
   LENGTH:                        0x04 OPT.  DATA 0x02 0x11 0x69 0x87
   ODD/EVEN IND                   0 even_number_of_digits
   NATURE OF ADDRESS IND          0x02 Calling_reserved_for_national_use
   NUMBER INCOMPLETE IND.         0 complete
   PRESENTATION IND.              0 address_presentation_allowed
   SCREENING IND.                 1 user_provided_passed_network_screening
   NUMBERING PLAN                 1 ISDN_Telephony_Numbering_Plan
   DIGITS:                        9678
```

```
RESERVED/UNKNOWN OPT PARM      0x3D
   LENGTH:                        0x01 OPT.  DATA 0x1F
USER SERVICE INFO              0x1D
   LENGTH:                        0x03 OPT.  DATA 0x80 0x90 0xA3
   EXTENSION BIT                  1 last_octet
   CODING STANDARD                0 CCITT_coding_standard
   BC INFO TRANSFER CAP           0 transfer_speech
   EXTENSION BIT                  1 last_octet
   TRANSFER MODE                  0 circuit_mode
   INFORMATION TRANSFER RATE      16 rate_64_kb_per_s
   EXTENSION BIT                  1 last_octet
   USER LAYER IDENTIFICATION      1 user_info_layer_1_protocol
   MULTIPLIER/PROTOCOL ID         3 A_law_speech
END OF OPTIONAL PARAMETERS     0x00
******************       END_OF_MSG                        ******************


14:07:33.607918  1-010-1[02129]  1-002-1[02065]  ITU  ISUP. -> IAM (01) CIC=00001
                                                              CDPN=92169679F CGPN=9678
                                                               SLS=01 Pr:0 Ni:NTL

********************************* DETAIL *********************************
CIC                            1
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 0x20 0x01
   NATL/INTL CALL IND             0 incoming_national_call
   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
   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 0x0A
   CALLING PARTYS CATEGORY        10 ordinary_subscriber_precedence_level_1
TRANSMISSION MEDIUM REQUIRED   0x02
   LENGTH:                        0x01 FIXED DATA 0x00
   TRANSMISSION MEDIUM REQUIRED   0 speech
INDEX TO CALLED PTY ADDRESS    0x02
INDEX TO OPTIONAL PART         0x09
CALLED PARTY NUMBER PARM       0x04
   LENGTH:                        0x07 VAR.  DATA 0x82 0x90 0x29 0x61 0x69 0x97 0x0F
   ODD/EVEN IND                   1 odd_number_of_digits
   NATURE OF ADDRESS IND          0x02 Called_reserved_for_national_use
   INTERNAL NETWORK PARM          1 routing to internal network number not allowed
   NUMBERING PLAN                 1 ISDN_Telephony_Numbering_Plan
   DIGITS:                        92169679F
   EXTENSION DIGIT                F -ST
OPTIONAL PARAMETERS:
CALLING PARTY ADDRESS          0x0A
   LENGTH:                        0x04 OPT.  DATA 0x02 0x11 0x69 0x87
   ODD/EVEN IND                   0 even_number_of_digits
   NATURE OF ADDRESS IND          0x02 Calling_reserved_for_national_use
   NUMBER INCOMPLETE IND.         0 complete
   PRESENTATION IND.              0 address_presentation_allowed
   SCREENING IND.                 1 user_provided_passed_network_screening
   NUMBERING PLAN                 1 ISDN_Telephony_Numbering_Plan
```

```
   DIGITS:                         9678
RESERVED/UNKNOWN OPT PARM      0x3D
   LENGTH:                         0x01 OPT.  DATA 0x1F
USER SERVICE INFO              0x1D
   LENGTH:                         0x03 OPT.  DATA 0x80 0x90 0xA3
   EXTENSION BIT                   1 last_octet
   CODING STANDARD                 0 CCITT_coding_standard
   BC INFO TRANSFER CAP            0 transfer_speech
   EXTENSION BIT                   1 last_octet
   TRANSFER MODE                   0 circuit_mode
   INFORMATION TRANSFER RATE       16 rate_64_kb_per_s
   EXTENSION BIT                   1 last_octet
   USER LAYER IDENTIFICATION       1 user_info_layer_1_protocol
   MULTIPLIER/PROTOCOL ID          3 A_law_speech
END OF OPTIONAL PARAMETERS     0x00
******************       END_OF_MSG                      ******************


14:07:33.630890  10.48.85.24:3001  10.48.85.187:3001
NI2+...... -> SETUP      (05)  PROT:08 CREF:0003
              IE:BEARER_CAPAB       (04) 8090a3
              IE:CHANNEL_ID         (18) e9808381
              IE:CALLING_PARTY NB   (6c) 0181 CALLING NB:9678
              IE:CALLED_PARTY NB    (70) 81 CALLED  NB:92169679
14:07:33.640377  10.48.85.187:3001    10.48.85.24:3001
  NI2+...... -> REL_COMP   (5a)  PROT:08 CREF:8003
              IE:CAUSE              (08) 80ba
              Cause 58 = Bearer Cap Not Avail
14:07:33.660505  1-002-1[02065]       1-010-1[02129]
  ITU  ISUP. -> REL (0c) CIC=00001  Cause 58 = Bearer Cap Not Avail
                SLS=01 Pr:0 Ni:NTL

********************************** DETAIL **********************************

CIC                            1
MESSAGE TYPE                   0x0C REL - Release_Msg
INDEX TO VARIABLE PART         0x02
INDEX TO OPTIONAL PART         0x00
CAUSE IND                      0x12
   LENGTH:                         0x02 VAR.  DATA 0x80 0xBA
   EXTENSION BIT                   1 diagnostic_is_not_included
   CODING STANDARD                 0 CCITT_standard
   GENERAL LOCATION                0 User
   EXTENSION BIT                   1 diagnostic_is_not_included
   CLASS                           3 Service or option not available
   VALUE IN CLASS                  10
   CAUSE VALUE                     58 Bearer capability not presently available
******************       END_OF_MSG                      ******************


14:07:33.742257  1-010-1[02129]   1-002-1[02065]
  ITU  ISUP. -> REL (0c) CIC=00062  Cause 58 = Bearer Cap Not Available
                SLS=14 Pr:0 Ni:NTL

********************************** DETAIL **********************************
CIC                            62
MESSAGE TYPE                   0x0C REL - Release_Msg
INDEX TO VARIABLE PART         0x02
INDEX TO OPTIONAL PART         0x00
CAUSE IND                      0x12
   LENGTH:                         0x02 VAR.  DATA 0x80 0xBA
   EXTENSION BIT                   1 diagnostic_is_not_included
   CODING STANDARD                 0 CCITT_standard
   GENERAL LOCATION                0 User
```

```
   EXTENSION BIT                  1 diagnostic_is_not_included
   CLASS                          3 Service or option not available
   VALUE IN CLASS                 10
   CAUSE VALUE                    58 Bearer capability not presently available
******************       END_OF_MSG                        ******************


14:07:33.770574  1-010-1[02129]   1-002-1[02065]   ITU  ISUP. -> RLC (10) CIC=00001
                                                                  SLS=01 Pr:0 Ni:NTL

********************************* DETAIL ***********************************
CIC                            1
MESSAGE TYPE                   0x10 RLC - Release_Complete_Msg
******************       END_OF_MSG                        ******************


14:07:33.780953  1-002-1[02065]   1-010-1[02129]  ITU  ISUP. -> RLC (10) CIC=00062
                                                                   SLS=14 Pr:0 Ni:NTL

********************************* DETAIL ***********************************
CIC                            62
MESSAGE TYPE                   0x10 RLC - Release_Complete_Msg
******************       END_OF_MSG
```

Note: Issue the Cisco IOS **debug** command **debug isdn q931** for the Cause i = 0x80**BA**. This is explained in the Understand **debug isdn q931** Disconnect Cause Codes document.

Note: For Cause i = 0x82**c1 - Bearer capability not implemented**, the network cannot provide the bearer capability requested by the user. This can be linked to a Telco problem.

If this is the case, add the command under the Serial interface. Issue **debug isdn q931** and check to see if you still encounter this problem. If so, issue the **debug isdn q931** command and also add these Cisco IOS commands to the configuration.

- **service timestamps debug datetime msec**
- **service timestamps log datetime msec**

Make a test call again, and check the output of the **debug isdn q931** command.

Add the **isdn incoming-voice modem** command under the Serial interface to change the behavior for `Cause i = 0x80BA`.

```
May  3 10:31:02.916: ISDN Se0:15 SC Q931: RX <- SETUP pd = 8  callref = 0x000D
        Bearer Capability i = 0x8090A3
                Standard = CCITT
                Transer Capability = Speech
                Transfer Mode = Circuit
                Transfer Rate = 64 kbit/s
        Channel ID i = 0xE980839F
                Exclusive, Interface 0, Channel 31
        Calling Party Number i = 0x0181, '9678'
                Plan:ISDN, Type:Unknown
        Called Party Number i = 0x81, '92169679'
                Plan:ISDN, Type:Unknown
May  3 10:31:02.936: ISDN Se0:15 SC Q931: TX -> CALL_PROC pd = 8  callref = 0x800D
        Channel ID i = 0xE180839F
                Preferred, Interface 0, Channel 31
May  3 10:31:05.300: ISDN Se0:15 SC Q931: TX -> ALERTING pd = 8  callref = 0x800D
        Facility i =
```

```
0x9E810003677464000001B41434D2C0D0A50524E2C6973646E2A2C2C4E45543
52A2C0D0A0D0A
May  3 10:31:07.088: ISDN Se0:15 SC Q931: TX -> CONNECT pd = 8  callref = 0x800D
May  3 10:31:07.108: ISDN Se0:15 SC Q931: RX <- CONNECT_ACK pd = 8  callref = 0x000D
May  3 10:31:09.672: %ISDN-6-CONNECT: Interface Serial0:30 is now connected to 9678
May  3 10:31:09.672: %ISDN-6-DISCONNECT: Interface Serial0:30  disconnected from 9678
, call lasted 2 seconds
May  3 10:31:09.672: ISDN Se0:15 SC Q931: TX -> DISCONNECT pd = 8  callref = 0x800D
        Cause i = 0x8090 - Normal call clearing
        Facility i =
0x9E810003677464000001B52454C2C0D0A50524E2C6973646E2A2C2C4E45543
52A2C0D0A0D0A
May  3 10:31:09.824: ISDN Se0:15 SC Q931: RX <- RELEASE pd = 8  callref = 0x000D
May  3 10:31:09.828: ISDN Se0:15 SC Q931: TX -> RELEASE_COMP pd = 8  callref = 0x800D
```

Troubleshoot and Verify

If you encounter any problems, collect an SS7 sniffer trace in combination with Cisco IOS **debug** command **debug isdn q931** and a Cisco PGW 2200 Message Definition Language (MDL) trace.

Collect a Cisco PGW 2200 MDL Trace

Follow these steps to collect an MDL trace:

1. Identify the Originating SS7 SigPath Number or the Originating TrunkGroup Number on which calls are placed.
2. Rotate the log by running the script located at /opt/CiscoMGC/bin/log_rotate.sh.
3. Start the MDL trace by issuing the **sta-sc-trc:*ss7sigPath name* | *orig trunkgroup number*** command and confirm. If you want more details, issue the **help:sta-sc-trc help** command through Man-Machine Language (MML).
4. Perform a test by making a call.
5. Stop the MDL trace by issuing the **stp-sc-trc:all** command.
6. Identify the Call ID (C:) of the bad call. If the test call is made in a test environment, only one Call ID is displayed.This is an example of the details you receive when you issue **./get_trc.sh trace_file_name**:

```
/opt/CiscoMGC/bin
 mgcusr@PGW2200% ./get_trc.sh  _ss7path_20040116104232.btr
     get_trc.sh ca/sim/sp Trace File Utility Mistral Version 1.2
     The ANALYSIS mdo file is:  GENERIC_ANALYSIS.mdo
     Retrieving _ss7path_20040116104232.btr trace file Call ID's, please wait...
     Enter one of the following commands:
     S = Simprint in less
     F = Simprint with printing of sent and received Fields in less
     D = Display trc trace in less
     G = Display trc trace in less (Generated)
     C = Convert to trc trace file
     A = Display CA file in less
     N = Move to Next call ID
     P = Move to Previous call ID
     L = List call ID's in current file
     X = Set SP flags
     H = Print Help
     Q = Quit get_trc.sh
     Or just enter the ID of the call you want if you know it
     Use (N)ext and (P)revious to move between the call ID's
     _ss7path_20040116104232.btr contains 10 call(s)
```

```
==> Working on call 1 ID 24 H = Help [S/F/D/G/C/A/N/P/L/H/Q/id]?
```

Note: These files can contain many mixed-up call tracings if the capture is taken on a production Cisco PGW 2200. Each tracing record in the file has a specific record type and records information of a type that relates to that record. Each record has a Call ID that relates it to a specific call.

7. Convert the MDL trace into a readable format. Go to the directory /opt/CiscoMGC/bin and issue the command **./get_trc.sh trace file name**.
8. Type **Call ID** at the prompt to jump to the MDL trace of the bad call.
9. Choose the **C** option to convert the trace file.**Note:** Files with the extension .btr are binary trace files produced by the Cisco PGW 2200 tracer function. The main part of the file name is given in the Cisco PGW 2200 MML command **sta-sc-trc**. The Cisco PGW 2200 always adds a .btr extension to these files. When you use the "C" option, the file is converted into text format and the extension .trc is added to the filename. These files contain detailed line-by-line trace information from the MDO code that was run in the simulation replay that produced the file, so they contain MDL traces.
10. The trace file is located at /opt/CiscoMGC/var/trace. Upload both the .btr and the .trc files to the Service Request for review.
11. Collect the platform.log file located at /opt/CiscoMGC/var/log.In some cases, while handling the Service Request, the Cisco Technical Support engineer asks that other platform.log information related to the problem be reported.

Collect snoop/SIP-SS7 Sniffer Traces

This section lists several methods for collecting sniffer traces. Which one you choose depends on whether you have Cisco Packet Telephony Center—Monitoring and Troubleshooting (PTC-MT) installed or are running an old version of Cisco snooper. Cisco snooper can provide a good understanding of the SS7-SIP call flow.

- Issue the **snoop** command on all Solaris platforms:To collect UNIX snoop information, log in as superuser and issue the command:

  ```
  snoop  -o snoop.log IP address
  ```

  Enter **Ctrl+C** to exit snoop and upload the snoop.log file to the case notes.**Note:** Explain in the case notes that this file was captured through use of the UNIX **snoop** command.
- Run the Cisco snooper application:To collect Cisco snooper information, log in as superuser and issue the **./snooper int *INTERFACE PARMS LIST*** command or run **./snooper**, which gives you a full description.

  ```
  ./snooper int hme'x' ni2+ ss7  > snooper_int1
  !--- Where 'x' is the interface number, which you can also find !--- by issuing the ifconfig -a command.
  ```

  Note: Upload the snooper_int1 file to the case notes.
- Run PTC-MT.To collect PTC-MT information, please log in as superuser and issue the **./ptcmt int *INTERFACE PARMS LIST*** command or run **./snooper**, which gives you a full description.

  ```
  ./ptcmt int hme'x' ni2+ ss7  > snooper_int1
  !--- Where 'x' is the interface number, which you can also find !--- by issuing the ifconfig
  ```

`-a command.`

Upload the "snooper_int1" file to the case notes.

Related Information

- **Cisco PGW 2200 Softswitch Tech Notes**
- **Configuration Examples for the PGW 2200**
- **Voice Technology Support**
- **Voice and Unified Communications Product Support**
- **Troubleshooting Cisco IP Telephony**
- **Technical Support - Cisco Systems**