Configuring and Troubleshooting E1 R2 Signaling for Data Calls

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Contents

Introduction

This document provides a configuration example and troubleshooting techniques for E1 R2 signaling for data calls.

Prerequisites

Requirements

Before attempting this configuration, it is recommended that you read the E1 R2 Signaling Theory document. For information on E1 R2 signaling for voice applications, refer to the document E1 R2 Signaling Configuration and Troubleshooting.

Components Used

This configuration was developed and tested using the software and hardware versions below. This configuration shows a back−to−back lab setup between a Cisco 3640 router and a Cisco AS5300 access server.

- The AS5300 is simulating the client and is running Cisco IOS® Software Version 12.2(3).
- The 3640 is acting as a server and is running Cisco IOS Software Version 12.1(10).

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, see the Cisco Technical Tips Conventions.

Background Information

E1 R2 signaling allows a Cisco universal access server to talk to central office trunks that also use E1 R2 signaling. R2 signaling is an international signaling standard that is common to channelized E1 networks. There is no single standard for R2 signaling. The ITU–T Q.400–Q.490 recommendation defines R2, but a number of countries implement R2 in entirely different ways.

Cisco Systems addresses this challenge by supporting many localized implementations of R2 signaling in its Cisco IOS software. R2 custom localization means that R2 signaling is supported for a wide range of countries and geographical regions. Cisco is continually supporting E1 R2 signaling variants in new countries.

Note: Only Modem ISDN channel aggregation (MICA) and Nextport digital modem modules support R2 functionality. No R2 support is provided for Microcom modems or non–modem applications.

Configure

In this section, you are presented with the information to configure the features described in this document. This configuration is valid for the following scenarios:

- Modem dialin connections over E1 R2
- E1 R2 back–to–back connections
- E1 R2 connections between Cisco router

Note: The configuration of the E1 controller is the same for data or voice calls. The only difference is:

- For data calls you need to configure the modems to accept the calls.
- For voice calls you need to configure the voice ports to accept the calls.

Note: To find additional information on the commands used in this document, use the Command Lookup Tool (registered customers only) .

Network Diagram

This document uses the network setup shown in the diagram below.
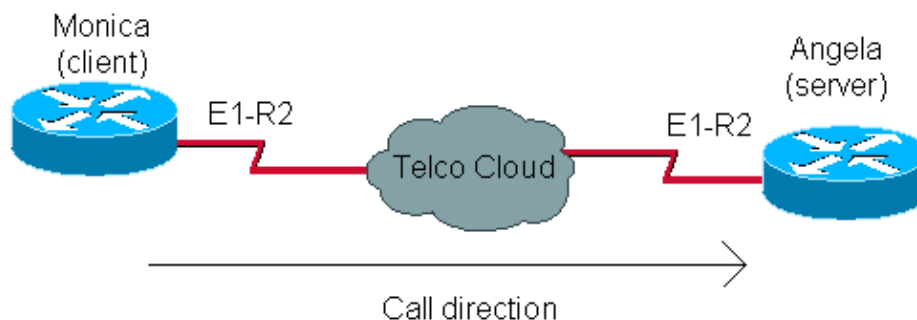
Configurations

Configuring E1 R2 for data calls involves two general steps:

- Configuring E1 R2

- Configuring the modems and related issues

The E1 R2 configuration is based on information obtained from the Telco. Refer to the document E1 R2 Signaling Configuration and Troubleshooting for additional information on the E1 R2 specific configuration.

The modem configuration is similar to that for any access server with, for example, a PRI line.

Monica (as5300)

```
Monica#show running-config

controller E1 1

!--- E1 R2 configuration

 framing NO-CRC4
 clock source line secondary 1
 ds0-group 1 timeslots 1-15,17-31 type r2-digital r2-compelled
 cas-custom 1
  country easteurope use-defaults
interface Async60

!--- Interface configuration for outgoing call

 no ip address
 encapsulation ppp
 dialer in-band
 dialer rotary-group 3
 async mode dedicated
 ppp authentication chap
line 60

!--- Line configuration for outgoing call

 modem InOut
 modem dialout controller e1 1

!--- Specify that e1 1 is used for outgoing call

 transport input all
 autoselect during-login
 autoselect ppp
```

angela (3640)

```
angela#show running-config
interface Ethernet0/0
 ip address 10.200.20.2 255.255.255.0
controller E1 2/0

!--- E1 R2 configuration

 framing NO-CRC4
 ds0-group 1 timeslots 1-15,17-31 type r2-digital r2-compelled
 cas-custom 1
  country easteurope use-defaults
interface Group-Async1
 ip unnumbered Ethernet0/0
 encapsulation ppp
 async mode interactive
 peer default ip address pool DIAL_POOL
 ppp authentication chap
 group-range 97 114
!
ip local pool DIAL_POOL 105.41.30.101 105.41.30.132
```

```
line 97 114
```

```
!--- Line configuration for incoming calls
```

```
 modem InOut
 autocommand ppp
 transport input all
 autoselect during-login
 autoselect ppp
```

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

For more information on troubleshooting E1 R2 failures, refer to E1 R2 Signaling Configuration and Troubleshooting.

Troubleshooting Commands

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

Note: Before issuing **debug** commands, please see Important Information on Debug Commands.

- **show controllers e1** – displays the controller state that is specific to controller hardware. For details, refer to Understanding the show controllers e1 Command.
- **show diag** – on the Cisco 3600, displays hardware information for the router, verifies if all hardware is recognized.
- **debug modem csm** – debugs the Call Switching Module (CSM) used to connect calls on the modem.
- **debug cas** – provides real–time traces of the CAS signaling bit status.
- **debug modem** – displays the modem line activity on an access server.
- **show modem version** – displays version information about the modem firmware, controller, and DSP code.

```
angela#show modem version
Slot 3:MICA-6DM Firmware, Source - flashow :/mica-modem-pw.2.7.3.0.bin
CP ver 2730 - 5/23/2001, CheckSum BCCEB316.
SP ver 2730 - 5/23/2001.
MICA 0: HW Version 2.1, Serial Number 21094004.
```

```
angela#show diag
Slot 2:
CE1 (Balanced) Port adapter, 1 port
Port adapter is analyzed
Port adapter insertion time unknown
EEPROM contents at hardware discovery:
Hardware revision 1.1 Board revision A0
Serial number 11359839 Part number 800-01234-04
Test history 0x0 RMA number 00-00-00
EEPROM format version 1
EEPROM contents (hex):
0x20: 01 2A 01 01 00 AD 56 5F 50 04 D2 04 00 00 00 00
0x30: 50 00 00 00 98 11 24 00 FF FF FF FF FF FF FF FF
```

```
angela#show controllers e1 2/0
E1 2/0 is up.
Applique type is Channelized E1 – balanced
Far End Block Errors Detected
No alarms detected.
Framing is NO-CRC4, Line Code is HDB3, Clock Source is Line.
Data in current interval (34 seconds elapsed):
0 Line Code Violations, 0 Path Code Violations
0 Slip Secs, 0 Fr Loss Secs, 0 Line Err Secs, 0 Degraded Mins
0 Errored Secs, 0 Bursty Err Secs, 0 Severely Err Secs, 0 Unavail
Secs
Robbed bit signals state:
timeslots rxA rxB rxC rxD txA txB txC txD
   1        1   0   0   1   1   0   0   1
   2        1   0   0   1   1   0   0   1
   3        1   0   0   1   1   0   0   1
   4        1   0   0   1   1   0   0   1
   5        1   0   0   1   1   0   0   1
   6        1   0   0   1   1   0   0   1
   7        1   0   0   1   1   0   0   1
   8        1   0   0   1   1   0   0   1
   9        1   0   0   1   1   0   0   1
  10        1   0   0   1   1   0   0   1
  11        1   0   0   1   1   0   0   1
  12        1   0   0   1   1   0   0   1
  13        1   0   0   1   1   0   0   1
  14        1   0   0   1   1   0   0   1
  15        1   0   0   1   1   0   0   1
  17        1   0   0   1   1   0   0   1
  18        1   0   0   1   1   0   0   1
  19        1   0   0   1   1   0   0   1
  20        1   0   0   1   1   0   0   1
  21        1   0   0   1   1   0   0   1
  22        1   0   0   1   1   0   0   1
  23        1   0   0   1   1   0   0   1
  24        1   0   0   1   1   0   0   1
  25        1   0   0   1   1   0   0   1
  26        1   0   0   1   1   0   0   1
  27        1   0   0   1   1   0   0   1
  28        1   0   0   1   1   0   0   1
  29        1   0   0   1   1   0   0   1
  30        1   0   0   1   1   0   0   1
  31        1   0   0   1   1   0   0   1
```

The client is dialing 789 necessary interpretations in the debugs of the server.

```
monica#2.2.2.1 2060
Trying 2.2.2.1, 2060 ... Open
at
OK
atdt789
```

To better understand this **debug** output, refer to the E1 R2 Signaling Theory document.

```
angela#show debug
General OS:
    Modem control/process activation debugging is on

CAS:
    Channel Associated Signaling debugging is on
CSM Modem Management:
    Modem Management Call Switching Module debugging is on

angela#
Oct 29 15:59:46.591: Modem 255/255 CSM: received EVENT_CALL_DIAL_IN with call_id 0006
```

```
Oct 29 15:59:46.591: src 2/0/25 dest 255/0/255 cause 768
Oct 29 15:59:46.591: CSM: Next free modem = 3/6; statbits = 80010020
Oct 29 15:59:46.591: Modem 3/6 CSM: modem is allocated, modems free=17
Oct 29 15:59:46.591: Modem 3/6 CSM: (CSM_PROC_IDLE)<--DSX0_CALL
Oct 29 15:59:46.595: Modem 3/6 Mica: configured for Answer mode,
 with Lower R2 signaling, 0x0 tone detection.
Oct 29 15:59:46.707: Modem 3/6 CSM: received EVENT_START_RX_TONE with call_id 0006
Oct 29 15:59:46.707: src 2/0/25 dest 3/0/6 cause 0
Oct 29 15:59:46.707: Modem 3/6 CSM:(CSM_PROC_IC_CAS_CHANNEL_LOCKED)<--DSX0_START_RX_TONE
Oct 29 15:59:46.707: Modem 3/6 CSM:(CSM_PROC_IC_CAS_CHANNEL_LOCKED)<--CSM_EVENT_MODEM_SETU
Oct 29 15:59:46.711: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE: R2_IN_IDLE R2 Got Event R2_START
Oct 29 15:59:46.715: Modem 3/6 Mica: in modem state CALL_SETUP
Oct 29 15:59:46.883: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_COLLECTI
```

!--- We can see number 7

```
Oct 29 15:59:46.887: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE:R2_IN_COLLECT_DNIS R2 Got Event 7
Oct 29 15:59:46.887: Modem 3/6 Mica: dialing number '1'
```

!--- MICA sends 1 (which means send next digit)

```
Oct 29 15:59:46.887: Modem 3/6 Mica: Detected dial digit '7'
Oct 29 15:59:46.959: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_GENERATI
Oct 29 15:59:47.011: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_COLLECTI
Oct 29 15:59:47.011: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE: R2_IN_COLLECT_DNIS R2 Got Event R2_TONE_OFF
Oct 29 15:59:47.011: Modem 3/6 Mica: dialing number '#'
Oct 29 15:59:47.011: Modem 3/6 Mica: Detected dial digit '#'
Oct 29 15:59:47.099: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_GENERATI
Oct 29 15:59:47.163: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_COLLECTI
```

!--- We can see number 8

```
Oct 29 15:59:47.163: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE: R2_IN_COLLECT_DNIS R2 Got Event 8
Oct 29 15:59:47.163: Modem 3/6 Mica: dialing number '1'
```

!--- MICA sends 1 (which means send next digit)

```
Oct 29 15:59:47.163: Modem 3/6 Mica: Detected dial digit '8'
Oct 29 15:59:47.235: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_GENERATI
Oct 29 15:59:47.299: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_COLLECTI
Oct 29 15:59:47.299: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE: R2_IN_COLLECT_DNIS R2 Got Event R2_TONE_OFF
Oct 29 15:59:47.299: Modem 3/6 Mica: dialing number '#'
Oct 29 15:59:47.299: Modem 3/6 Mica: Detected dial digit '#'
Oct 29 15:59:47.375: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_GENERATI
Oct 29 15:59:47.427: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_COLLECTI
Oct 29 15:59:47.427: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE:R2_IN_COLLECT_DNIS R2 Got Event 9
Oct 29 15:59:47.427: Modem 3/6 Mica: dialing number '1'
```

!--- MICA sends 1 (which means send next digit)

```
Oct 29 15:59:47.427: Modem 3/6 Mica: Detected dial digit '9'
Oct 29 15:59:47.499: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_GENERATI
Oct 29 15:59:47.551: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_COLLECTI
Oct 29 15:59:47.551: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE:R2_IN_COLLECT_DNIS R2 Got Event R2_TONE_OFF
Oct 29 15:59:47.551: Modem 3/6 Mica: dialing number '#'
Oct 29 15:59:47.551: Modem 3/6 Mica: Detected dial digit '#'
Oct 29 15:59:47.639: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_GENERATI
```

!--- NORMAL TIMEOUT--> 3 seconds

```
Oct 29 16:00:02.426: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE: R2_IN_COLLECT_DNIS R2 Got Event R2_TONE_TIMER
```

!--- MICA sends 3 (which means ADDRESS COMPLETE)

```
Oct 29 16:00:02.426: Modem 3/6 Mica: dialing number '3#'
Oct 29 16:00:02.654: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_GENERAT
Oct 29 16:00:02.678: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_COLLECT
```

!--- We can see number 1 after we send 3

```
Oct 29 16:00:02.678: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE:R2_IN_CATEGORY R2 Got Event 1
Oct 29 16:00:02.682: r2_comp_category:R2_ALERTING
```

!--- MICA sends 3 (which means ADDRESS COMPLETE)

```
Oct 29 16:00:02.682: Modem 3/6 Mica: dialing number '6'
Oct 29 16:00:02.682: Modem 3/6 Mica: Detected dial digit '1'
Oct 29 16:00:02.834: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_COLLECT
Oct 29 16:00:02.834: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE: R2_IN_COMPLETE R2 Got Event R2_TONE_OFF
Oct 29 16:00:02.834: Modem 3/6 CSM: Pending digit generation for #
Oct 29 16:00:02.834: Modem 3/6 Mica: Detected dial digit '#'
Oct 29 16:00:02.854: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_GENERAT
Oct 29 16:00:02.854: Modem 3/6 Mica: dialing number '#'
Oct 29 16:00:02.854: Modem 3/6 CSM: Generate 1 pending digit(s) #
Oct 29 16:00:02.918: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--MODEM_DIGITS_GENERAT
Oct 29 16:00:03.834: R2 Incoming Modem(3/6): DSX (E1 2/0:25):
STATE:R2_IN_WAIT_GUARD R2 Got Event R2_TONE_TIMER
Oct 29 16:00:03.834: R2_IN_IDLE:2 r2_in_connect called
Oct 29 16:00:03.834: Modem 3/6 CSM:(CSM_PROC_IC_CAS_COLLECT_DIGITS)<--ADDR_INFO_COLLECTED
Oct 29 16:00:03.842: Modem 3/6 CSM: received EVENT_CHANNEL_CONNECTED with call_id 0006
Oct 29 16:00:03.842: src 2/0/25 dest 3/0/6 cause 0
Oct 29 16:00:03.842: Modem 3/6 CSM:(CSM_PROC_IC_CAS_ANSWER_CALL)<--DSX0_CONNECTED
Oct 29 16:00:04.926: Modem 3/6 Mica: in modem state CONNECT
Oct 29 16:00:12.290: Modem 3/6 Mica: in modem state LINK
Oct 29 16:00:21.278: Modem 3/6 Mica: in modem state TRAINUP
Oct 29 16:00:23.002: Modem 3/6 Mica: in modem state EC_NEGOTIATING
Oct 29 16:00:23.170: Modem 3/6 CSM:(CSM_PROC_CAS_WAIT_FOR_CARRIER)<--MODEM_CONNECTED
Oct 29 16:00:23.170: Modem 3/6 Mica: in modem state STEADY
Oct 29 16:00:23.194: Modem 3/6 Mica: CONNECT at 33600/33600 (Tx/Rx), V34+, LAPM, V42bis
Oct 29 16:00:23.446: TTY103: DSR came up
Oct 29 16:00:23.446: tty103: Modem: IDLE->(unknown)
Oct 29 16:00:23.446: TTY103: Autoselect started
Oct 29 16:00:23.446: TTY103: create timer type 0, 120 seconds
---------
monica#**show debug**
General OS:
   Modem control/process activation debugging is on
CAS:
   Channel Associated Signaling debugging is on
Modem Management:
   Modem Management Call Switching Module debugging is on

monica#
Oct 29 15:59:46.540: Mica Modem(1/59): Rcvd Dial String(T789)
Oct 29 15:59:46.540: Mica Modem(1/59): Dropped character T
Oct 29 15:59:46.540: Mica Modem(1/59): Dial String to be processed (789)
Oct 29 15:59:46.540: Mica Modem(1/59): End of Dial String
Oct 29 15:59:46.540: CSM_PROC_IDLE: CSM_EVENT_MODEM_OFFHOOK at slot 1, port 59
Oct 29 15:59:46.540: csm_get_signaling_channel csm_call_info->bchan_num 0xFFFFFFFF
Oct 29 15:59:46.540: csm_get_signaling_channel dchan_index=24952,next_index=0,
dchan_info=0x62269D0C
Oct 29 15:59:46.540: csm_get_signaling_channel csm_call_info->bchan_num 0xFFFFFFFF
```

```
Oct 29 15:59:46.540: csm_get_signaling_channel dchan_index=0,next_index=1,
dchan_info=0x61D37574
Oct 29 15:59:46.540: CSM_RX_CAS_EVENT_FROM_NEAT:(8007):
EVENT_CHANNEL_LOCK at slot 1 port 59 on ctrlr 1 chan 25
Oct 29 15:59:46.544: CSM_PROC_OC4_DIALING:
CSM_EVENT_DSX0_BCHAN_ASSIGNED at slot 1, port 59
Oct 29 15:59:46.544: csm_connect_pri_vdev:
TS allocated at bp_stream 1, bp_Ch 9, vdev_common 0x61B7BBAC 1/59
Oct 29 15:59:46.544: Mica Modem(1/59): Configure(0x1 = 0x1)
Oct 29 15:59:46.544: Mica Modem(1/59): Configure(0x23 = 0x4)
Oct 29 15:59:46.544: Mica Modem(1/59): Call Setup
Oct 29 15:59:46.544: from Trunk(0): (1/25): Tx SEIZURE (ABCD=0001)
Oct 29 15:59:46.616: Mica Modem(1/59): State Transition to Call Setup
Oct 29 15:59:46.712: from Trunk(0): (1/25): Rx SEIZURE_ACK (ABCD=1101)
Oct 29 15:59:46.752: CSM_RX_CAS_EVENT_FROM_NEAT:(8007):
EVENT_START_TX_TONE at slot 1 and port 59
Oct 29 15:59:46.752: CSM_PROC_OC4_DIALING:
CSM_EVENT_DSX0_START_TX_TONE at slot 1, port 59
Oct 29 15:59:46.752: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_IDLE R2 Got Event R2_START
Oct 29 15:59:46.752: Mica Modem(1/59): Generate digits:called_party_num=# len=1
Oct 29 15:59:46.752: Mica Modem(1/59): Will Generate digits:called_party_num=7 len=1
Oct 29 15:59:46.824: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 15:59:46.824: Mica Modem(1/59): Generate digits
Oct 29 15:59:46.900: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 15:59:46.944: Mica Modem(1/59): Rcvd Digit detected(1)
Oct 29 15:59:46.944: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_PROCESS_A R2 Got Event 1
Oct 29 15:59:46.944: Mica Modem(1/59): Generate digits:called_party_num=# len=1
Oct 29 15:59:47.020: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 15:59:47.108: Mica Modem(1/59): Rcvd Digit detected(#)
Oct 29 15:59:47.108: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_PROCESS_A R2 Got Event R2_TONE_OFF
Oct 29 15:59:47.108: Mica Modem(1/59): Generate digits:called_party_num=8 len=1
Oct 29 15:59:47.184: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 15:59:47.228: Mica Modem(1/59): Rcvd Digit detected(1)
Oct 29 15:59:47.228: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_PROCESS_A R2 Got Event 1
Oct 29 15:59:47.228: Mica Modem(1/59): Generate digits:called_party_num=# len=1
Oct 29 15:59:47.304: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 15:59:47.380: Mica Modem(1/59): Rcvd Digit detected(#)
ct 29 15:59:47.380: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_PROCESS_A R2 Got Event R2_TONE_OFF
Oct 29 15:59:47.380: Mica Modem(1/59): Generate digits:called_party_num=9 len=1
Oct 29 15:59:47.440: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 15:59:47.484: Mica Modem(1/59): Rcvd Digit detected(1)
Oct 29 15:59:47.484: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_PROCESS_A R2 Got Event 1
Oct 29 15:59:47.484: Mica Modem(1/59): Generate digits:called_party_num=# len=1
Oct 29 15:59:47.560: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 15:59:47.636: Mica Modem(1/59): Rcvd Digit detected(#)
Oct 29 15:59:47.636: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_PROCESS_A R2 Got Event R2_TONE_OFF
Oct 29 16:00:02.521: Mica Modem(1/59): Rcvd Digit detected(3)
Oct 29 16:00:02.521: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_PROCESS_A R2 Got Event 3
Oct 29 16:00:02.521: Mica Modem(1/59): Generate digits:called_party_num=# len=1
Oct 29 16:00:02.593: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 16:00:02.641: Mica Modem(1/59): Rcvd Digit detected(#)
Oct 29 16:00:02.641: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_PROCESS_B R2 Got Event R2_TONE_OFF
Oct 29 16:00:02.641: Mica Modem(1/59): Generate digits:called_party_num=1 len=1
Oct 29 16:00:02.713: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 16:00:02.745: Mica Modem(1/59): Rcvd Digit detected(6)
Oct 29 16:00:02.745: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_PROCESS_B R2 Got Event 6
```

```
Oct 29 16:00:02.745: Mica Modem(1/59): Generate digits:called_party_num=# len=1
Oct 29 16:00:02.745: CSM_PROC_OC4_DIALING:
CSM_EVENT_ADDR_INFO_COLLECTED at slot 1, port 59
Oct 29 16:00:02.821: Mica Modem(1/59): Rcvd Digits Generated
Oct 29 16:00:02.925: Mica Modem(1/59): Rcvd Digit detected(#)
Oct 29 16:00:02.925: R2 Outgoing Modem(1/59): DSX (E1 1:25):
STATE: R2_OUT_IDLE R2 Got Event R2_TONE_OFF
Oct 29 16:00:03.845: from Trunk(0): (1/25): Rx ANSWERED (ABCD=0101)
Oct 29 16:00:03.885: CSM_RX_CAS_EVENT_FROM_NEAT:(8007):
EVENT_CHANNEL_CONNECTED at slot 1 and port 59
Oct 29 16:00:03.885: CSM_PROC_OC5_WAIT_FOR_CARRIER:
CSM_EVENT_DSX0_CONNECTED at slot 1, port 59
Oct 29 16:00:03.885: Mica Modem(1/59): Link Initiate
Oct 29 16:00:03.917: Mica Modem(1/59): State Transition to Connect
Oct 29 16:00:06.709: Mica Modem(1/59): State Transition to unknown
Oct 29 16:00:12.497: Mica Modem(1/59): State Transition to Link
Oct 29 16:00:15.197: Mica Modem(1/59): State Transition to unknown
Oct 29 16:00:17.241: Mica Modem(1/59): State Transition to unknown
Oct 29 16:00:21.385: Mica Modem(1/59): State Transition to Trainup
Oct 29 16:00:23.061: Mica Modem(1/59): State Transition to EC Negotiating
Oct 29 16:00:23.245: Mica Modem(1/59): State Transition to Steady State
```

Related Information

- **E1 R2 Signaling Theory**
- **E1 R2 Signaling Configuration and Troubleshooting**
- **E1 R2 Customization with the cas−custom Command**
- **E1 R2 Signaling for the Cisco AS5300 and Cisco AS5200 Access Servers**
- **E1 R2 Signaling for the Cisco 3620 and 3640 Series Routers**
- **E1 R2 Signaling for the Cisco AS5800**
- **Dial and Access Technology Support Page**
- **Technical Support − Cisco Systems**