Application Note

Avaya Definity CM 2.0 to a Cisco IAD243X using E1-CAS E&M with SIP

January 5, 2007 Initial Version

Table of Contents

Introduction

This is an application note for connectivity to the Avaya Definity G3 Communications Manager 2.0 with Cisco IAD243X Gateway via E1 CAS e&m-to-SIP communication (10/100baseT).

The network topology diagram (Figure 1) shows the test setup for end-to-end interoperability with the Cisco IAD243X Gateway connected to the PBX via E1-CAS E&M signaling. IP trunk connectivity between the IAD243X's is achieved by using SIP protocol.

Network Topology

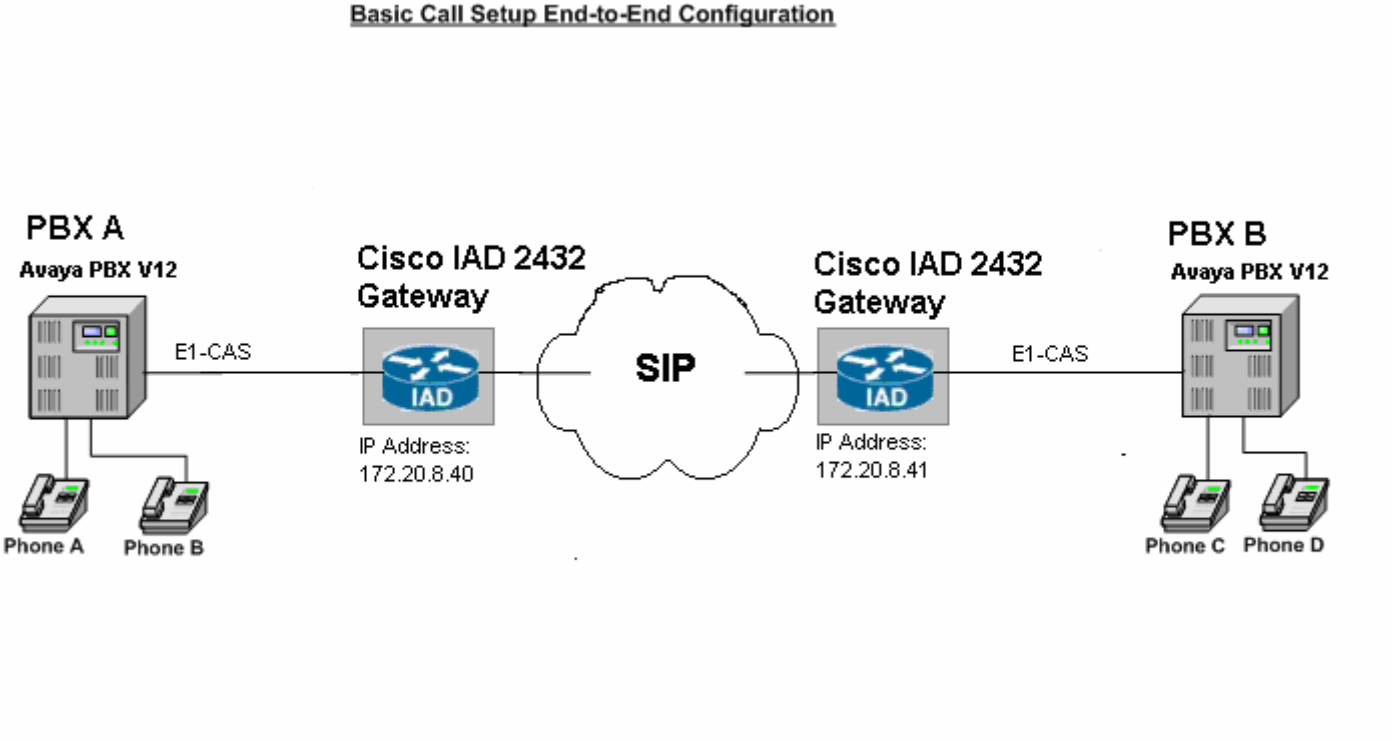


Figure 1. Network Topology

Limitations

ANI (Automatic Number Identification) is not supported with the detailed Avaya configuration.

When a call conference is initiated by the external calling phone to conference a local phone (i.e. Phone A calls Phone C, Phone A conferences Phone D), in order for the call not to drop between the local phones at the instance that the conferencing phone leaves (i.e. Phone A hangs-up), the Avaya trunk configuration must be set for “Disconnect Supervision – In? yes Out? yes. This is detailed in the Configuration section.

Hardware Requirements

2 Cisco IAD2432 24FXS

2 Avaya Definity G3 w/ TN464F circuit pack

4 Avaya Digital stations 8410D

1 Cisco Catalyst switch (CAT6500)

Software Requirements

Avaya PBX: G3 Version 12 Communications Manager 2.0

Cisco IOS Release: c2430-ik9o3s-mz-124-9.T1

Features

Features Supported

Basic end-to-end calls

Call Transfer – Local and Network/External

Call Waiting

Call on-hold

Call Forward (Unconditional, Busy and No answer) – local and Network/External

3-way Conference

Features Not Supported

ANI (Automatic Number Identification, also known as Caller ID)

Configuration

Configuration Sequence and Tasks for the Avaya System

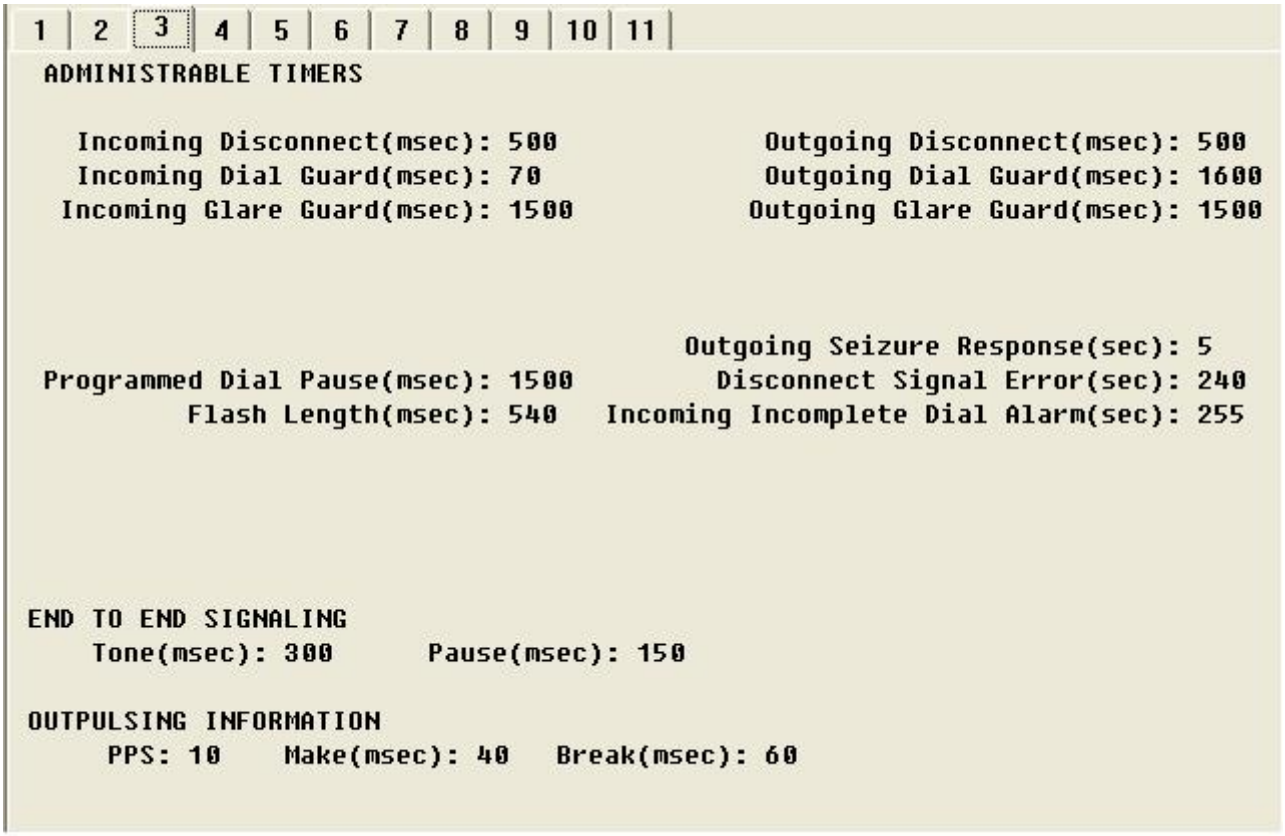
1. DS1 Configuration
2. Trunk group
3. Assign trunk members
4. Uniform-dialing
5. ARR
6. Route Pattern
7. Digital station config

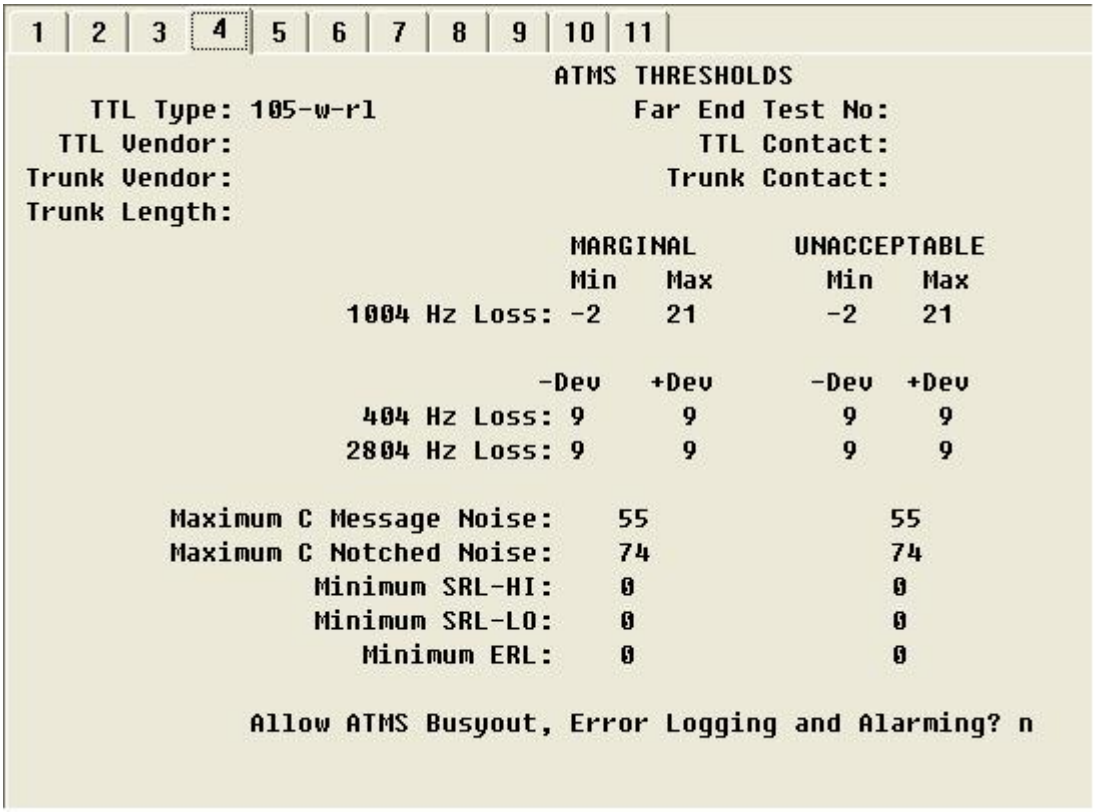
Avaya PBX Configuration

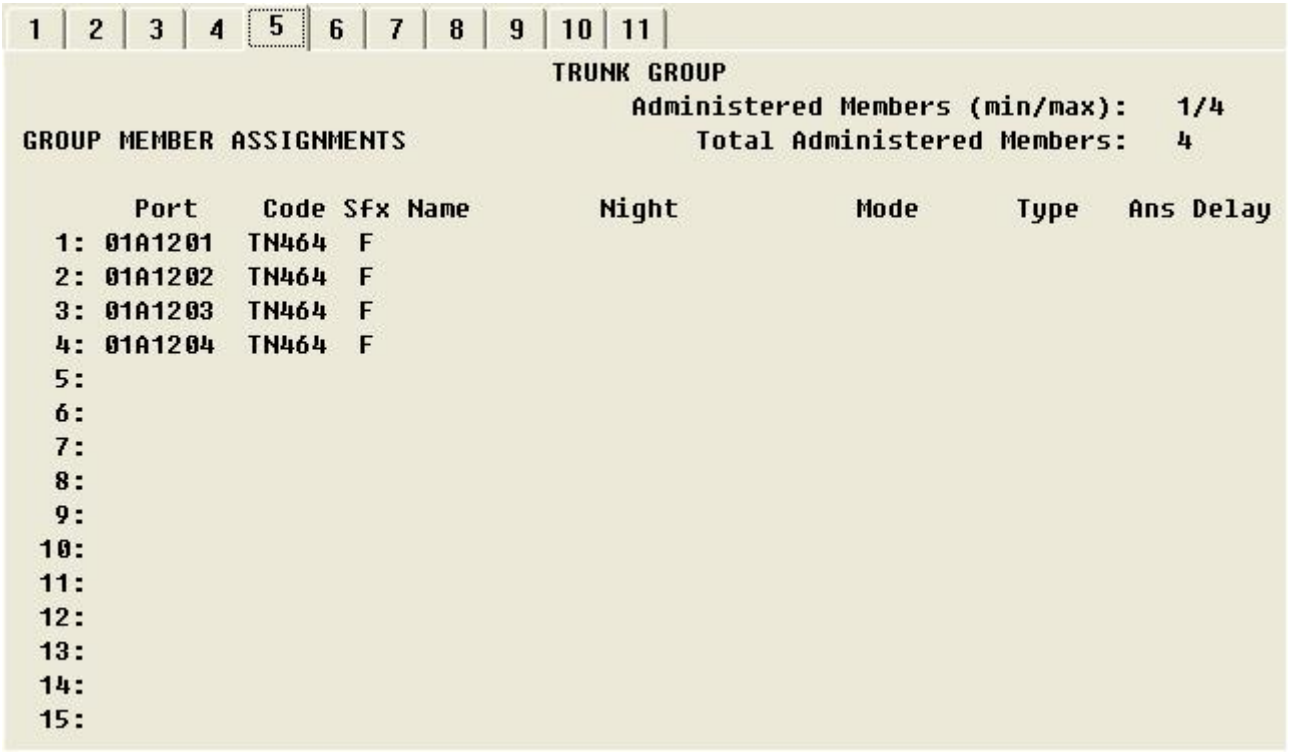
```
                              DS1 CIRCUIT PACK

           Location: 01A12                          Name: Tony IAD test
           Bit Rate: 2.048                  Line Coding: hdb3

      Signaling Mode: CAS

        Interconnect: pbx                Country Protocol: 4

Interface Companding: alaw                            CRC? y
           Idle Code: 11111111




      Slip Detection? n                Near-end CSU Type: other
```

```
1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
                                TRUNK GROUP

Group Number: 12                    Group Type: tie           CDR Reports: y
  Group Name: Tony B. IAD testing         COR: 1        TN: 1        TAC: 612
   Direction: two-way        Outgoing Display? n Trunk Signaling Type:
 Dial Access? y                Busy Threshold: 99        Night Service:
Queue Length: 0                                     Incoming Destination:
   Comm Type: voice                 Auth Code? n
                                  Trunk Flash? n

TRUNK PARAMETERS
   Trunk Type (in/out): delay/delay      Incoming Rotary Timeout(sec):
    Outgoing Dial Type: tone                      Incoming Dial Type: tone
      Wink Timer(msec): 500                  Disconnect Timing(msec):
       Digit Treatment:                                      Digits:
                                                  Sig Bit Inversion: A&B
     Analog Loss Group: 9                       Digital Loss Group: 13
    Incoming Dial Tone? y

 Disconnect Supervision - In? y  Out? y
 Answer Supervision Timeout: 0             Receive Answer Supervision? y
```

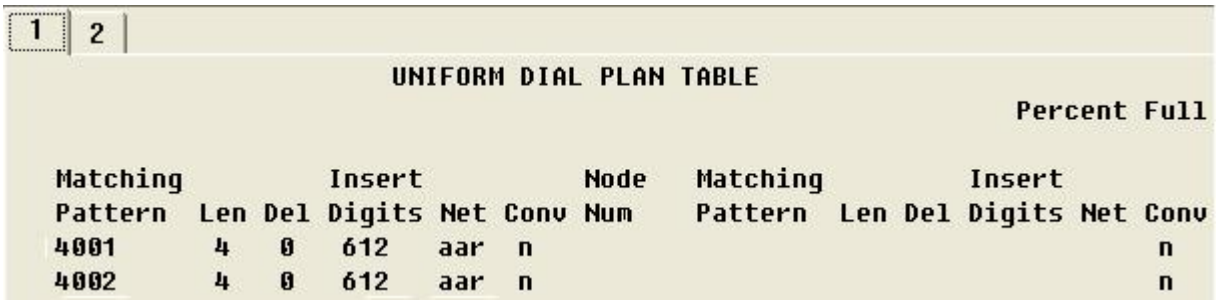
```
1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
TRUNK FEATURES
          ACA Assignment? n            Measured: none
                                  Internal Alert? n       Maintenance Tests? y
                                Data Restriction? n
                                  Glare Handling: none
            Used for DCS? n
   Suppress # Outpulsing? n
                    Seize When Maintenance Busy: neither-end



Incoming Tone (DTMF) ANI: no                  Per Call CPN Blocking Code:
         Connected to CO? n                 Per Call CPN Unblocking Code:

                                                  Ds1 Echo Cancellation? n
```



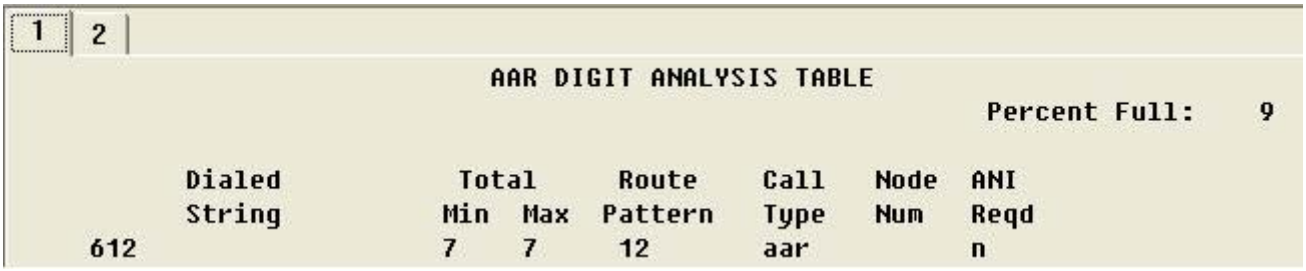




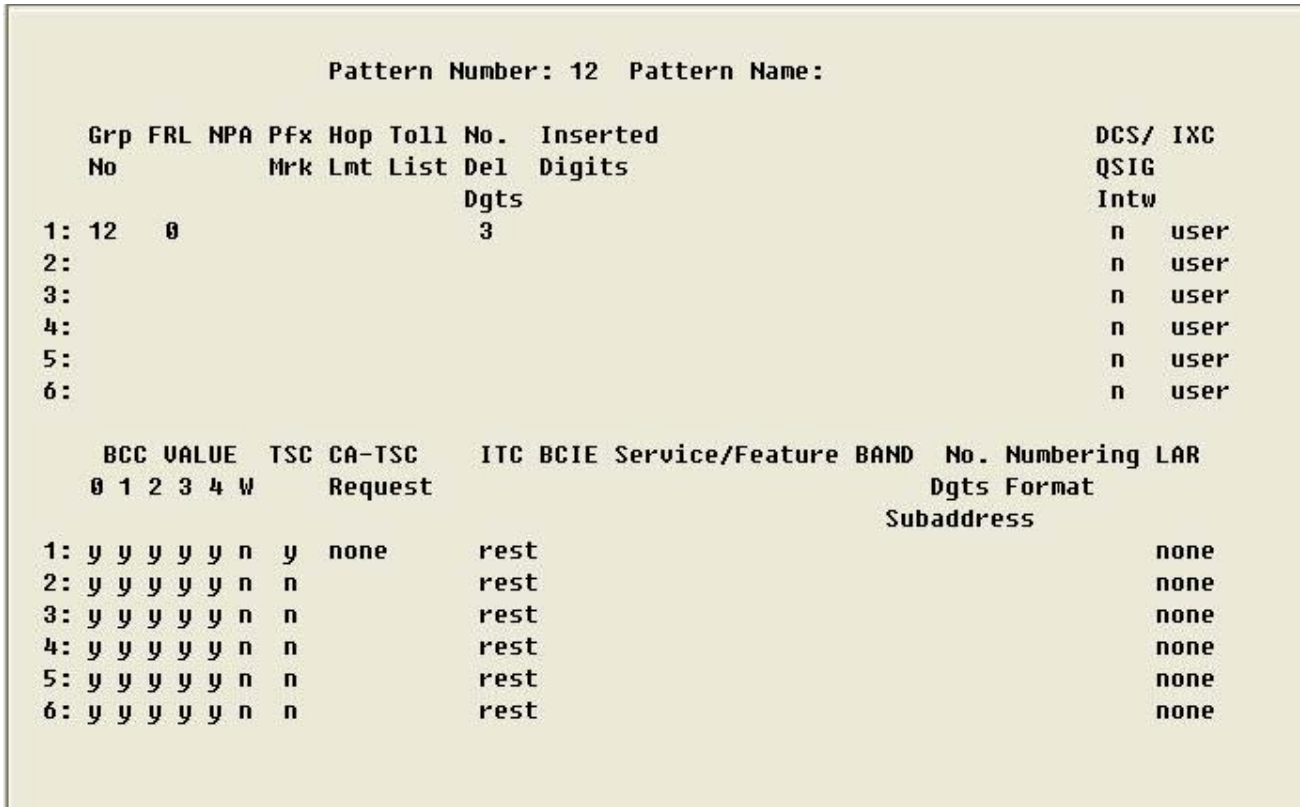
Note: When adding members to the trunk group you will need to add all available ports to the trunk group. For T1 you will configure all 24 available timeslots (e.g. 01A1201 thru 01A1224). Do so in a sequential manner.



```
1 2

                    UNIFORM DIAL PLAN TABLE
                                                          Percent Full

  Matching          Insert          Node   Matching         Insert
  Pattern  Len Del  Digits Net Conv Num    Pattern  Len Del Digits Net Conv
  4001       4   0   612    aar  n                                    n
  4002       4   0   612    aar  n                                    n
```



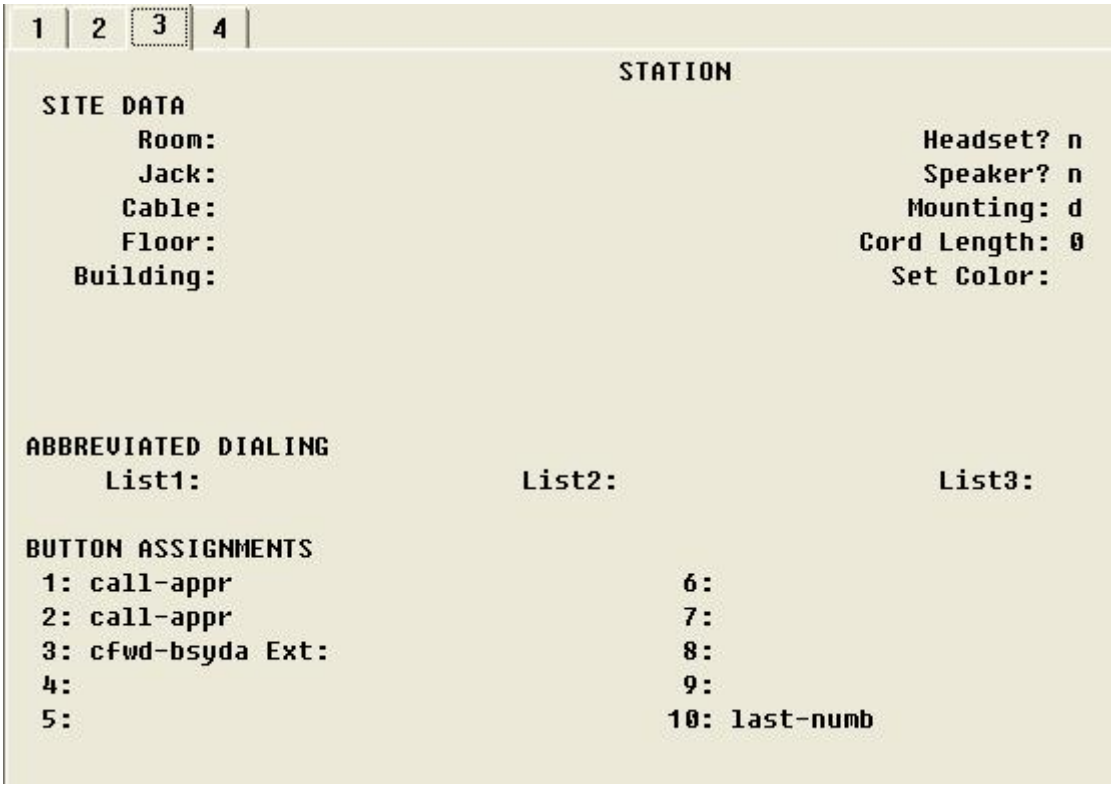
```
1 2

                        AAR DIGIT ANALYSIS TABLE
                                                    Percent Full:    9

        Dialed          Total     Route    Call    Node  ANI
        String          Min  Max  Pattern  Type    Num   Reqd
   612                  7    7    12       aar           n
```

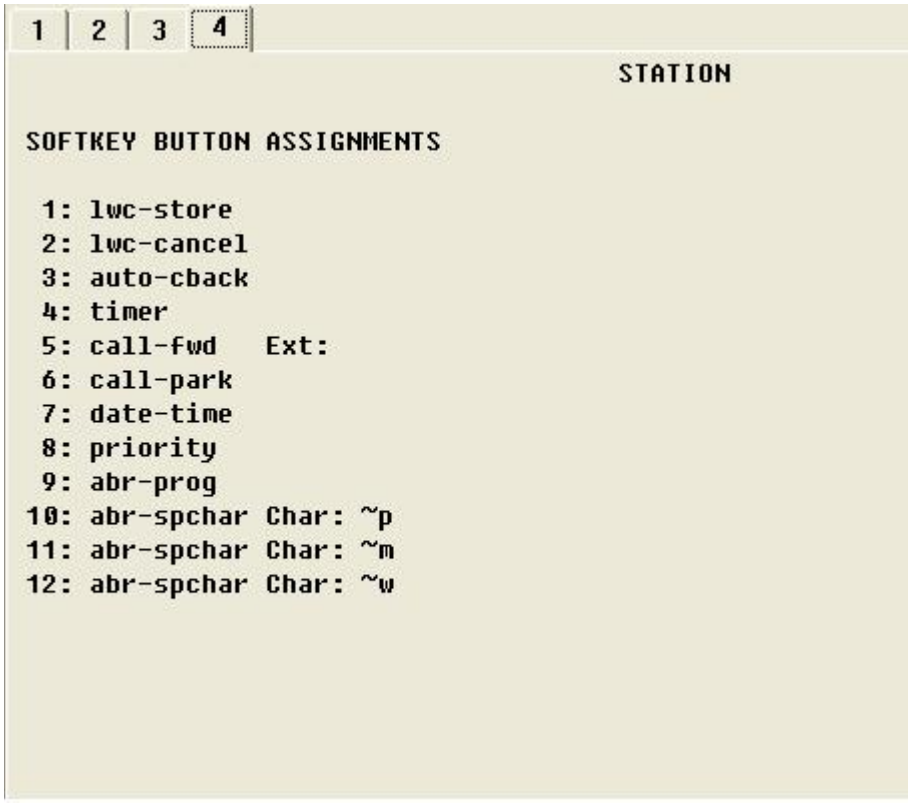


```
                Pattern Number: 12  Pattern Name:

   Grp FRL NPA Pfx Hop Toll No.  Inserted                          DCS/ IXC
   No          Mrk Lmt List Del  Digits                          QSIG
                            Dgts                                 Intw
1: 12   0                    3                                    n   user
2:                                                                n   user
3:                                                                n   user
4:                                                                n   user
5:                                                                n   user
6:                                                                n   user

    BCC VALUE  TSC CA-TSC    ITC BCIE Service/Feature BAND  No. Numbering LAR
   0 1 2 3 4 W     Request                                  Dgts Format
                                                         Subaddress
1: y y y y y n  y  none      rest                                    none
2: y y y y y n  n            rest                                    none
3: y y y y y n  n            rest                                    none
4: y y y y y n  n            rest                                    none
5: y y y y y n  n            rest                                    none
6: y y y y y n  n            rest                                    none
```

```
1 | 2 | 3 | 4

                                    STATION

Extension: 2004                       Lock Messages? n          BCC: 0
     Type: 8410D                      Security Code:             TN: 1
     Port: 01A0604                 Coverage Path 1: 103          COR: 1
     Name: PBX-Ken1                Coverage Path 2:              COS: 1
                                   Hunt-to Station:

STATION OPTIONS
              Loss Group: 2            Personalized Ringing Pattern: 1
            Data Module? n                      Message Lamp Ext: 2004
           Speakerphone: 2-way               Mute Button Enabled? y
       Display Language: english

                                             Media Complex Ext:
                                                  IP SoftPhone? n
```

```
1 | 2 | 3 | 4

                                    STATION
FEATURE OPTIONS
           LWC Reception: spe          Auto Select Any Idle Appearance? n
         LWC Activation? y                     Coverage Msg Retrieval? y
  LWC Log External Calls? n                          Auto Answer: none
            CDR Privacy? n                      Data Restriction? n
   Redirect Notification? y                 Idle Appearance Preference? n
 Per Button Ring Control? n
   Bridged Call Alerting? n                   Restrict Last Appearance? n
  Active Station Ringing: single

        H.320 Conversion? n          Per Station CPN - Send Calling Number?
      Service Link Mode: as-needed
        Multimedia Mode: basic                  Audible Message Waiting? y
    MWI Served User Type:                    Display Client Redirection? y
                                          Select Last Used Appearance? n
                                            Coverage After Forwarding? s
                                              Multimedia Early Answer? n
                                          Direct IP-IP Audio Connections? y
 Emergency Location Ext: 2004                    IP Audio Hairpinning? y
```





Cisco IAD2432 24FXS Configuration

```
IAD_SIP1_V7#sh run
Building configuration...

Current configuration : 1647 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname IAD_SIP1_V7
!
boot-start-marker
boot-end-marker
!
card type e1 1
enable password cisco
!
no aaa new-model
!
resource policy
!
network-clock-participate E1 1/0
network-clock-participate E1 1/1
ip subnet-zero
!
!
!
!
!
voice-card 0
!
!
!
!
!
!
!
!
!
!
!
!
!
controller E1 1/0
 framing crc4
 linecode hdb3
!
controller E1 1/1
 mode cas
 framing crc4
 linecode hdb3
 ds0-group 0 timeslots 1-4 type e&m-delay-start
!
!
!
!
interface FastEthernet0/0
 ip address 172.20.8.40 255.255.255.0
 duplex auto
 speed auto
!
```

```
interface FastEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
ip default-gateway 172.20.8.1
ip http server
!
ip classless
ip route 0.0.0.0 0.0.0.0 172.20.8.1
!
!
!
!
!
control-plane
!
!
!
voice-port 1/1:0
!
voice-port 2/0
!
voice-port 2/1
!
voice-port 2/2
!
voice-port 2/3
!
voice-port 2/4
!
voice-port 2/5
!
voice-port 2/6
!
voice-port 2/7
!
voice-port 2/8
!
voice-port 2/9
!
voice-port 2/10
!
voice-port 2/11
!
voice-port 2/12
!
voice-port 2/13
!
voice-port 2/14
!
voice-port 2/15
!
voice-port 2/16
!
voice-port 2/17
!
voice-port 2/18
!
voice-port 2/19
!
voice-port 2/20
!
voice-port 2/21
!
```

```
voice-port 2/22
!
voice-port 2/23
!
!
!
!
dial-peer voice 4000 voip
 destination-pattern 4...
 session protocol sipv2
 session target ipv4:172.20.110.254
 supplementary-service pass-through
!
dial-peer voice 2000 pots
 destination-pattern 2...
 supplementary-service pass-through
 port 1/1:0
 forward-digits all
!
!
line con 0
 password cisco
line aux 0
line vty 0 4
 password cisco
 login
!
end

IAD_SIP1_V7#
```

Acronyms

Acronym	Definitions
IAD	Integrated Access Device
SIP	Session Initiation Protocol

Important Information

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

Cisco Systems has more than 200 offices in the following countries and regions. Addresses, phone numbers, and fax numbers are listed on the Cisco Web site at www.cisco.com/go/offices.

Argentina • Australia • Austria • Belgium • Brazil • Bulgaria • Canada • Chile • China PRC • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE • Finland • France • Germany • Greece • Hong Kong SAR • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia • Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Scotland • Singapore • Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey Ukraine • United Kingdom • United States • Venezuela • Vietnam • Zimbabwe

Printed in the USA