Avaya Flare® integration with CS2100 via Avaya Aura® Session Manager

Issue 1.0

Abstract

These Application Notes present a sample configuration that enables Avaya CS2100 (version SE13) via SIP trunk to Avaya Aura® Session Manager with Avaya Flare® endpoints to communicate.
1. Introduction.

This document will document the setup in the CS2100 to integrate with Avaya Aura® Session Manager using SIP trunks. Calls will terminate Avaya Flare® endpoints connected to the SM.

![Configuration Overview Diagram]

Figure 1: Configuration Overview
2. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Tables are recommended:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 2100</td>
<td>SE13</td>
</tr>
<tr>
<td>Session Server Line (aka A2E)</td>
<td>12.0.12.2</td>
</tr>
<tr>
<td>Centrex IP Client Manager</td>
<td>11mr2</td>
</tr>
<tr>
<td>1100 IP Phone (SIP)</td>
<td>4.03.09</td>
</tr>
<tr>
<td>1100 IP Phone (Unistim)</td>
<td>0625C8J</td>
</tr>
<tr>
<td>Session Manager</td>
<td>6.1.5.0.615006</td>
</tr>
<tr>
<td>Communication Manager</td>
<td>R016x.00.1.510.1</td>
</tr>
<tr>
<td>Flare</td>
<td>1.1.0</td>
</tr>
</tbody>
</table>
3. Configure CS2100 for SIP

This document assumes that the CS2100 and Avaya Aura® Session Manager are already installed and base configuration steps have been performed to have two functioning IP call servers. Flare stations registered to Avaya Aura® Session Manager were used for testing. Only configuration steps relevant to the test plan will be described in this document.

Log into CMT tools and access the Gateway Controller configuration. CS2100 Codec config, verify that the correct Codec profile is configured.
Select the GWC that has Line_Trunk_AUD_NA Profile. Codec selection on GWC-3 (SIP GWC). Verify the desired code profile is chosen on the GWC.
On the Gateway tab you will add a new Gateway to connect to the SM. IP Address is the SESM Service IP. Profile is VOIP_VPN. Res Terms is the number of channels including D channel. Protocol is GCP and port 7060.
On the Carriers tab choose Add. Gateway name should match configured Gateway. Number of ports, the number of bearer channels. Select VoIP VPN. Note the Node Num and Start Term used. They will be used during the CS2100 Core configuration.
CS2100 Core Configuration

cllri of search sippbx2labx
CLLI 'SIPPBX2LABX' occurs in the following tuples:
Table  Key: Sub Tuple
-----------------------------------------------
CLLI    SIPPBX2LABX 174 24 0
TRKGRP   SIPPBX2LABX PRA 0 NPDGP NCR ASEQ 2142380000 (3PC 21)$
         S
CLIINTE  SIPPBX2LABX SIPPBX S10 15 NSS 0 0 N (23)
IBNCTE   997
         (15A N N N SIPPBX2LABX N PUB NONE N N 996) $ S
TRKSGRP  SIPPBX2LABX0 DS1S16 ISDN 8 12 870931 2 N STAND NETWORK
         PI PTUSER N UNIQ1100 N SSHL 6W 3 12 12 164KHDUC
         S S
TRKMEM   SIPPBX2LABX 10 GWC 3 12 122
TRKMEM   SIPPBX2LABX 20 GWC 3 12 123
TRKMEM   SIPPBX2LABX 30 GWC 3 12 124
TRKMEM   SIPPBX2LABX 40 GWC 3 12 125
TRKMEM   SIPPBX2LABX 50 GWC 3 12 126
TRKMEM   SIPPBX2LABX 60 GWC 3 12 127
TRKMEM   SIPPBX2LABX 70 GWC 3 12 128
TRKMEM   SIPPBX2LABX 80 GWC 3 12 129
TRKMEM   SIPPBX2LABX 90 GWC 3 12 130
TRKMEM   SIPPBX2LABX 100 GWC 3 12 131
TRKMEM   SIPPBX2LABX 110 GWC 3 12 132
TRKMEM   SIPPBX2LABX 120 GWC 3 12 133
TRKMEM   SIPPBX2LABX 130 GWC 3 12 134
TRKMEM   SIPPBX2LABX 140 GWC 3 12 135
TRKMEM   SIPPBX2LABX 150 GWC 3 12 136
TRKMEM   SIPPBX2LABX 160 GWC 3 12 137
TRKMEM   SIPPBX2LABX 170 GWC 3 12 138
TRKMEM   SIPPBX2LABX 180 GWC 3 12 139
TRKMEM   SIPPBX2LABX 190 GWC 3 12 140
TRKMEM   SIPPBX2LABX 200 GWC 3 12 141
TRKMEM   SIPPBX2LABX 210 GWC 3 12 142
TRKMEM   SIPPBX2LABX 220 GWC 3 12 143
TRKMEM   SIPPBX2LABX 230 GWC 3 12 144
TRKNAME  174 SIPPBX2LABX
LTMAP   3PC 21 CLI15SIPPBX2LABX (TE10)$
-----------------------------------------------
Total of 30 occurrences of SIPPBX2LABX
Outgoing call from Flare, to CS2100 and out PRI Telco trunks:

```
~traver tr sipbx21abx 19722386616 b
TABLE TRIGRP
SIPBX21ABX PRA O NPDGP NCRTASEQ 2142380000(3PC 21) S$
TABLE ITCALLS
3PC 21 PUB RTEREF IBNRT2 13 S$
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_OFFICE_TRIGGRP NIL
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.
TABLE IBNRT2
13 RX MTL2 0 270 S$
EXIT TABLE IBNRT2
+++ TRAVER: SUCCESSFUL CALLTRACE +++
DIGIT TRANSLATION ROUTES
1.AVAYAPRI3 N CDN PUB UNK 9722386616 NIL NSF BC SPEECH
TREATMENT ROUTES. TREATMENT IS: 6NCT
1.ANIPDIL
2.TL20
3.LKOUT
+++ TRAVER: SUCCESSFUL CALLTRACE +++
```
After NCOS change, second half of translation for outgoing call from Flare:

`trava12381470 19722386616 b`
TABLE KSETLINE
CKER 03 00 71.1 DNY 2381470 MTL2 0 27 972 (C RN) (MWT) (LNRA) 5 MBS
TABLE DNATRIS
TUPLE NOT FOUND
TABLE DN6RPS
TUPLE NOT FOUND
TABLE KSETFET
TUPLE NOT FOUND
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OF CVAR
AIN OFFICE TRIGGRP NIL
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
MTL2 28 0 0 USER (XLAS PT28 FT1 DC 2) (C RL 2 ALLOWED) (ERWT) (OCTXLA OCT1) 5
TABLE CUSTHEAD: CUSTGRP, PREЛИМ, CUSTXLA, FEATXLA, VACTRME, AND DISCOL
MTL2 CTMTL2 CT2 FT1 0 DC 2
TABLE DIGCOL
DC 2 COLS 2
TABLE IBNRTE: XLANAME PT28
PT28 1972238666 ROUTE N N I N 1 I N I N 1 N I N 1 N I
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNRTE
41 N N N N N AVAYAPRI3 0
EXIT TABLE IBNRTE
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.
+++ TRAVER: SUCCESSFUL CALL TRACE +++

DIGIT TRANSLATION ROUTES

1 AVAYAPRI3 N CDN PUB UNK 9722386616 NIL NSF BC SPEECH

TREATMENT ROUTES. TREATMENT IS: GNCT
1 ANNPDIL
2 TL20
3 IKRUT

+++ TRAVER: SUCCESSFUL CALL TRACE +++
Incoming call from Flare to CICM set on CS2100:

```
\traver tr sipbx2labx 9722386798 b
TABLE TRIGRP
SIPBX2LABX PRA 0 HPDGP NCRT ASEQ 21,42380000 (3PC 21) $ $
TABLE LTCLLS
3PC 21 PUB RTEREF IBNR2 13 $ $
TABLE CUSTSTN
TUPLE NOT FOUND
TABLE OF CVAR
AIN_OFFICE TRIGGRP NIL
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.
TABLE IBNR2
13 RX MTL2 0 27 0 $ $
EXIT TABLE IBNR2
+++ TRAVER: SUCCESSFUL CALLTRACE +++
DIGIT TRANSLATION ROUTES
1 LINE  9722386798 ST
TREATMENT ROUTES: TREATMENT IS: 6NCT
1 ANNPDIL
2 T2L20
3 U3OUT
+++ TRAVER: SUCCESSFUL CALLTRACE +++
```
After retranslated NCOS, this is the rest of the translations for this call:

```
#tracer 12381470 9722386798b
TABLE KSETLINE
CIC 03 00 071 1 DN Y 2381470 MTL2 0 27 972 {CFX} {MWT} {LHRA} $ MBS
TABLE DNATTRS
TUPLE NOT FOUND
TABLE DNGRPS
TUPLE NOT FOUND
TABLE KSETFAT
TUPLE NOT FOUND
TABLE CUSTYN
TUPLE NOT FOUND
TABLE OFCVAR
AIN_Office_TRIG6RP NIL
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
MTL2 28 0 0 BUSER {XLAS PT28 FTI DC2} {CRL 2 ALLOWED} {ERWT} {OCTXLA OCT1}$
TABLE CUSTHEAD: CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRME AND DISCOL
MTL2 CTMLT2 CT2 FT1 0 DC2
TABLE DISCOL
DC 29 POTS Y
TABLE IBNLAXA: XLNAME PT28
PT28 9722386 ROUTE MN 3 N 7 10 NGSTY T IBNRT 1018 S
TABLE DISCOL
NDGT specified: digits collected individually
TABLE IBNRTE
1018 DN 972 238 M0 7
 . TABLE TOFCNAME
 . 972 238 S
 . TABLE DNNIV
 . 972 238 6798 INC CIC 03 00 072
TABLE DNFEAT
TUPLE NOT FOUND
TABLE DNATTRS
. 972 238 6798
 . {PUBLIC NAME STEVE WHITE}$ S S
 . TABLE DNGRPS
 . TUPLE NOT FOUND
EXIT TABLE IBNRT
AIN Info Collected TDP: no subscribed trigger.
TABLE FNPATD$G
EMPTY TABLE: TUPLE NOT FOUND
AIN Info Analyzed TDP: no subscribed trigger.
AIN Term Attempt TDP: no subscribed trigger.
+++ TRAVER: SUCCESSFUL CALL TRACE +++
DIGIT TRANSLATION ROUTES
1 LINE 9722386798 ST
TREATMENT ROUTES. TREATMENT IS: GNCT
1 ANHPDIL
2 TL20
3 LKOUT
+++ TRAVER: SUCCESSFUL CALL TRACE +++
```
Initial incoming call from TELCO:

```
~travert avayapri3 9722386798 b

table trigrp

Avayapri3 1bn2o elonert mtll 0 midl10 nan5disc o y n n n n y o 10 n 0 0 0
0 n n n n n n n natl(ltid 3pc 39) s

table ltcalls

3pc 39 pub rtref ibnrate 39 s

tabf custsfn

tuple not found

table ofcvar

ain_office_triggrp nil

AIN info Collected TDP: no subscribed trigger.
AIN info Analyzed TDP: no subscribed trigger.

Table ibnrte

39 rx mtll 0 200 24 s

tabf digman

24 {rem 3}

exit table digman

exit table ibnrte

+++ tracer: successful call trace +++

digit translation routes

1 line

9722386798 st

treatment routes. treatment is: gnct

1 annpnl

2 tl20

3 lKOut

+++ tracer: successful call trace +++
```
SIMRING leg of incoming call:

~tracer 12386798 13032386794 b

TABLE KSETLINE
CLKM 03 0 00 72 1 DNY 2386798 MTL1 0 10 972 {CFX} {MWI} {LNRA} 5 MBS
TABLE DNATTRS
972 238 6798
   (PUBLIC {NAME STEVE_WHITE} S) S S
TABLE DNGRPS
TUPLE NOT FOUND
TABLE KSETFEAT
TUPLE NOT FOUND
TABLE CUSTSYN
TUPLE NOT FOUND
TABLE OHCVAR
AIN_OFFICE_TRIGGRP NIL
AIN Orig Attempt TDP: no subscribed trigger.
TABLE NCOS
MTL1 10 0 0 P10 {XLAN P10 FT1 NDGT} {CRL1 BLOCKED} {OH O TONE_OH0} {CBO 2 3 Y Z} {ERWT} {ACRY} {OCTX1 OCT1}
TABLE CUSTHEAD; CUSTGRP, PRELIMXLA, CUSTXLA, FEATXLA, VACTRME, AND DIGCOL
MTL1 CMTL1 CT1 FT1 0 BCI
TABLE DIGCOL
DC1 1 COL5 2
TABLE IBLXLA; XLANAME P10
P10 L 13032383 ROUTE N N 1 N 11 NDGT Y T IBNRT 6 S
TABLE DIGCOL
NDGT specified: digits collected individually
TABLE IBNRT
   6 N N N N N SIPPBX2LAbX0
EXIT TABLE IBNRT
AIN Info Collected TDP: no subscribed trigger.
AIN Info Analyzed TDP: no subscribed trigger.
+++ TRAVER: SUCCESSFUL CALL TRACER +++
DIGITTRANSLATION ROUTES
1 SIPPBX2LAbX N CDN PVT L 3032386794 NIL_NSF BC SPEECH
Terminating LTID is 3PC 21
TREATMENT ROUTES. TREATMENT IS: GNC
1 ANNPDII
2 TL2D
3 LKOUT
+++ TRAVER: SUCCESSFUL CALL TRACER +++
CICM Set information on CS2100:

LEN: CICM 0800072
TYPE: SINGLE PARTY LINE
SNPA: 972
DIRECTORY NUMBER: 2386798
LINE CLASS CODE: M5216 SET
CUSTGRP: MT1 Subgr:0 NCOS:10 RING:Y
CARD CODE: RDTEBS 6ND: N PADGRP: PKNIL BNV: NL MNO: Y
PM NODE NUMBER : 17
PM TERMINAL NUMBER : 73
BEARERNET: IP IP
OPTIONS:
NAME PUBLIC STEVE WHITE LNRA
OLS IDLETLS INCOMING SIMRING D ACT N $ MWT MWLY ALL N CXR C TAL N STD CNF
C06 CFD N 238999111 CFD N 2389990 A1

KEY  DN
---  ---
1  DN   9722386798
2  DN   0011186798

KEY FEATURE
---  ---
1  OLS  IDLE
1  TLS INCOMING
1  SIMRING D ACT N $
3  MWT MWLY ALL N
4  CXR C TAL N STD
5  CNF C06
6  CFU N   238999111
6  CFD N   2389990 A1

--------------------------------------------------------------------------
SIP Set information on CS2100:

```plaintext
>qlen 2386795

LEN: SLIN 00 00 39
TYPE: SINGLE PARTY LINE
SNPA: 972
DIRECTORY NUMBER: 2386795
LINE CLASS CODE: IBM
IBM TYPE: STATION
CUSTGRP: MTL1 SUBGRP: 0 NCOS: 10
SIGNALLING TYPE: DIGITONE
CARDCODE: RDSLG GND: N PADGRP: PKNIL BNV: NL MNO: N
PM NODE NUMBER : 22
PM TERMINAL NUMBER : 40
BEARERET: IP IP
OPTIONS:
CWT 3WC CWI LNR SCWID DGT CND NOAMA CNAMD NOAMA NAME PUBLIC 2386795 PUB
PRIVATE 2386795 PRI CFU N $ I CFD N 2389990 A CFB N 2389990 A MWT MWL N N
DPL Y 10 AGNTPCP SIP IETF SIMRIN 1 ACT N $
Open MCP GUI. Configure Logical Name and IP address for SM. Then External Node name.
Next configure CS2K SIP PBX. For this lab UDP transport and port 5060 were used.
Add SIP PBX to SESM. Add SIP PBX Route, this is where the LTID configured in the Core table is matched to the far-end SIP PBX. In SIP PBX Link Maintenance verify that it is ONLINE.
Open Prov GUI. Add SIPPBX to Service Node. Add a Node name, select the Address Name from the dropdown. Select a Node type, Location and select Is Trusted.

Assign your root Domain to the Node.
Add ISN data in Solution, CS 2000, SIP PBX. Enter username, password, and confirm password.
4. Communication Manager Configuration

Standard SIP configuration in Communication Manager for Session Manager integration is used for CS2100 integration. Any special manipulation needed is done in by Session Manager and configured in System Manager. Screenshots below show a few of the Communication Manager SIP configuration screens:

```
display node-names ip

+----------------+---------------+
| Name           | IP Address    |
+----------------+---------------+
| MX_EE_S2       | 135.9.156.216|
| SN             | 135.9.169.24  |
| CS2100         | 47.164.37.40  |
| default        | 0.0.0.0       |
| me1            | 135.9.169.4   |
| mefp-aes       | 135.9.169.27  |
| procr          | 135.9.169.22  |
| procr6         | ::            |
| tftp           | 135.9.153.111|
+----------------+---------------+

( 9 of 9 administered node-names were displayed )
Use 'list node-names' command to see all the administered node-names
Use 'change node-names ip xxx' to change a node-name 'xxx' or add a node-name
```

Only the procr and SM node names need defined in the above screenshot. The other entries were from unrelated testing.
SIP signaling group to Session Manager defined above and associated trunk group below. Not all trunk group configuration pages are shown as nothing unique was required on subsequent administrative pages.
In this test local stations were 10 digit long and began with 303-xxx-xxxx. The last 7 digits matched the associated CS2100 stations that began with 972-xxx-xxxx. The routing in Communication Manager was setup to 10 digit dial anything with a leading 9 to Session Manager as below.
### UNIFORM DIAL PLAN TABLE

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Len</th>
<th>Del</th>
<th>Insert Digits</th>
<th>Node</th>
<th>Conv</th>
<th>Num</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>4</td>
<td>0</td>
<td>aar n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>0</td>
<td>aar n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>222</td>
<td>3</td>
<td>0</td>
<td>aar n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>0</td>
<td>aar n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td>1</td>
<td>ars n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>805866</td>
<td>10</td>
<td>0</td>
<td>aar n</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>0</td>
<td>aar n</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### AAR DIGIT ANALYSIS TABLE

<table>
<thead>
<tr>
<th>Dialed String</th>
<th>Total Min</th>
<th>Total Max</th>
<th>Route Pattern</th>
<th>Call Type</th>
<th>Node</th>
<th>ANI</th>
<th>Req'd</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>4</td>
<td>4</td>
<td>99</td>
<td>aar</td>
<td></td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>3</td>
<td>50</td>
<td>aar</td>
<td></td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>10</td>
<td>3</td>
<td>aar</td>
<td></td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>3</td>
<td>50</td>
<td>aar</td>
<td></td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>7</td>
<td>3</td>
<td>aar</td>
<td></td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>805866</td>
<td>10</td>
<td>10</td>
<td>323</td>
<td>pubu</td>
<td></td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>aar</td>
<td></td>
<td>n</td>
<td></td>
</tr>
</tbody>
</table>
Station programming in Communication Manager was standard for a Flare unit with an example below.
5. System Manager Configuration

The CS2100 SIP entity is setup in System Manager as shown below:
6. Verification Steps

Calls were placed from TELCO into CS2100 which rang either CICM or SIP sets on the CS2100. Using SIMRING feature the CS2100 sent these calls via SIP trunk to the Avaya Aura® Session Manager terminating on the Flare devices. Calls placed from the Flare units to CS2100 stations and Telco gave the associated station caller ID.

7. Conclusion

Flare devices operate with CS2100 via Session Manager over SIP trunk. There is currently an issue where Message Waiting Indication between a CS 2100 hosting the voicemail and the Avaya Aura® Session Manager is not supported.

8. Additional References

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<th>Document</th>
<th>Title</th>
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<tbody>
<tr>
<td>03-603324</td>
<td>Administering Avaya Aura® Session Manager</td>
</tr>
<tr>
<td>18-603949</td>
<td>Administering Avaya Flare® Communicator for iPad Devices</td>
</tr>
<tr>
<td>NN10399-110</td>
<td>Communication Server 2000 – Adaptive Application Engine Configuration</td>
</tr>
<tr>
<td>NN10399-109</td>
<td>CS 2000 Adaptive Application Engine – Using the Provisioning Client</td>
</tr>
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