

MCS SIP Integration with Avaya Communication Manager

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Overview

This document outlines the configuration steps to integrate the Mutare Communication Server (MCS) using SIP with the Avaya Aura Communication Manager.

Document *145-MCS Specifications*, should be reviewed before attempting to complete this document. We recommend downloading the most recent version from <http://www.mutare.com/techdocs.asp>.

Site Configuration

Avaya Aura Communication Manager must be at release 5.1 or higher.

For this document, the configuration was as follows:

- Avaya S8300 running Communication Manager (CM) in a G450 Gateway.
- The MCS is running on a Windows 2003 Server and communicates to the Avaya SIP infrastructure via SIP trunks.
- On the Avaya G450 Gateway, the signaling and media resources needed to support SIP and H.323 trunks are integrated directly on the media gateway processor.

Outbound calls originating from Mutare applications on the MCS are sent to the Communication Manager via the configured SIP trunks. Inbound calls terminating on the Mutare applications on the MCS are first received by the Communication Manager, then are directed to the Mutare applications on the MCS through the configured SIP trunks.

For the purposes of the configuration examples below, the following IP configuration was used:

- Mutare MCS – 192.168.1.81
- Avaya CM – 192.168.1.71

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Configure Avaya Aura Communication Manager

Communication Manager License

Use the **display system-parameters customer-options** command to verify that the Communication Manager license has sufficient remaining capacity for SIP trunks by comparing the **Maximum Administered SIP Trunks** field value with the corresponding value in the **USED** column.

```
display system-parameters customer-options                               Page 2 of 10
                                OPTIONAL FEATURES

IP PORT CAPACITIES                                                    USED
    Maximum Administered H.323 Trunks: 12                             11
    Maximum Concurrently Registered IP Stations: 450                  16
    Maximum Administered Remote Office Trunks: 450                    0
Maximum Concurrently Registered Remote Office Stations: 450          0
    Maximum Concurrently Registered IP eCons: 0                       0
    Max Concur Registered Unauthenticated H.323 Stations: 0           0
    Maximum Video Capable H.323 Stations: 0                          0
    Maximum Video Capable IP Softphones: 0                           0
    Maximum Administered SIP Trunks: 450 37
    Maximum Administered Ad-hoc Video Conferencing Ports: 0           0
    Maximum Number of DS1 Boards with Echo Cancellation: 80           0
        Maximum TN2501 VAL Boards: 0                                  0
        Maximum Media Gateway VAL Sources: 50                         1
    Maximum TN2602 Boards with 80 VoIP Channels: 0                    0
    Maximum TN2602 Boards with 320 VoIP Channels: 0                   0
    Maximum Number of Expanded Meet-me Conference Ports: 0            0
```

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IP Interfaces

Use the list ip-interface all command to identify which IP interfaces are located in which network region.

```
list ip-interface all
```

IP INTERFACES

ON	Type	Slot	Code/Sfx	Node Name/ IP-Address	Mask	Gateway Node	Net Rgn	VLAN
---	---	---	---	-----	---	-----	---	---
y	PROCR			192.168.1.71	/24	192.168.1.1	1	

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IP Network Region

The configuration of the IP network regions is assumed to be already in place and is included here for clarity. Use **display ip-network-region** command to view these settings. Important fields:

- The **Authoritative Domain** field is configured to match the domain name configured on the Avaya SES. This name appears in the "From" header of SIP messages originating from this IP region.
- **IP-IP Direct Audio** (media shuffling) was enabled to allow audio traffic to be sent directly between IP endpoints without using media resources in the Avaya Media Gateway.
- The **Codec Set** field was set to the IP codec set to be used for calls within this IP network region.

```
display ip-network-region 1                                     Page 1 of 19
                                                                IP NETWORK REGION
Region: 1
Location: 1           Authoritative Domain: mutaresip.com
Name: main
MEDIA PARAMETERS
  Codec Set: 1
  Intra-region IP-IP Direct Audio: yes
  Inter-region IP-IP Direct Audio: yes
  UDP Port Min: 2048
  UDP Port Max: 3029
  IP Audio Hairpinning? n
DIFFSERV/TOS PARAMETERS
  Call Control PHB Value: 34
  Audio PHB Value: 46
  Video PHB Value: 26
  RTCP Reporting Enabled? y
  RTCP MONITOR SERVER PARAMETERS
  Use Default Server Parameters? y
802.1P/Q PARAMETERS
  Call Control 802.1p Priority: 7
  Audio 802.1p Priority: 6
  Video 802.1p Priority: 5
  AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS
  H.323 Link Bounce Recovery? y
  RSVP Enabled? n
  Idle Traffic Interval (sec): 20
  Keep-Alive Interval (sec): 5
  Keep-Alive Count: 5
```

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IP Node Names

Use the **change node-names ip** command to create a node name that maps to the Mutare MCS IP address.

```
change node-names ip                                     Page 1 of 2
                                                         IP NODE NAMES
Name              IP Address
cmm                192.168.1.73
default           0.0.0.0
ivr              192.168.1.81
msgserver         192.168.1.38
msgserver2        192.168.1.36
procr             192.168.1.71
sip-proxy         192.168.1.71
```

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IP Network Map

Use the **change ip-network map** command to ensure that the proper Network Region is assigned to the Mutare MCS IP address.

```
change ip-network-map                                     Page 1 of 63
                                                         IP ADDRESS MAPPING

IP Address                                               Subnet Network      Emergency
                                                         Bits   Region VLAN Location Ext
-----
FROM: 10.10.1.0                                         /24    5      n
  TO: 10.10.1.255
FROM: 172.16.10.0                                       /24    5      n
  TO: 172.16.10.255
FROM: 192.168.1.81                                    /      1      n
TO: 192.168.1.81
```

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Codecs

Use the **change ip-codec-set** to verify that the codec is configured to G.711MU.

```
display ip-codec-set 1 Page 1 of 2
```

IP Codec Set

Codec Set: 1

Audio	Silence	Frames	Packet
Codec	Suppression	Per Pkt	Size (ms)
1: G.711MU	n	2	20
2:			

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Signaling Group

The signaling group and the associated SIP trunk group are used for routing calls to/from the Mutare MCS. Important fields:

- **Group Type:** sip.
- **Transport Method:** tls (Transport Layer Security)
- **Co-Resident SES:** Set to **y** for this system. May not apply in your configuration.
- **Near-end Node Name:** This will be either **procr** if co-resident SES or use the node name that maps to the IP address of the CLAN circuit pack used to connect to the MCS.
- **Far-end Node Name:** Node name of the MCS, in this case, **ivr**.
- **Near-end Listen Port:** This will default to **5061** unless co-resident SES, then use **6001**.
- **Far-end Listen Port:** Change to **5060**.
- **Far-end Network Region:** This should be set to the network region which contains the MCS.
- **Far-end Domain:** This is set to the IP address assigned to the MCS. This domain is sent in the headers of the SIP INVITE messages for calls originating from and terminating to the MCS using this signaling group.
- **DTMF over IP:** Set to the default value of **rtp-payload**, which allows the CM to send DTMF using RFC 2833.
- **Direct IP-IP Audio Connections:** Set to **y** to enable media shuffling on the trunk level.

```
display signaling-group 4

                                SIGNALING GROUP

Group Number: 4                  Group Type: sip
                                Transport Method: tcp
IMS Enabled? n                   Co-Resident SES? y

Near-end Node Name: procr        Far-end Node Name: ivr
Near-end Listen Port: 6001       Far-end Listen Port: 5060
                                Far-end Network Region: 1
Far-end Domain: 192.168.1.81

                                Bypass If IP Threshold Exceeded? n

DTMF over IP: rtp-payload        Direct IP-IP Audio Connections? y
Session Establishment Timer(min): 3 IP Audio Hairpinning? n
Enable Layer 3 Test? n           Direct IP-IP Early Media? n
H.323 Station Outgoing Direct Media? n Alternate Route Timer(sec): 6
```


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Trunk Group

The trunk group should be configured as follows. Important fields:

- **Group Type:** sip
- **Group Name:** Use a descriptive name.
- **Direction:** two-way
- **Service Type:** tie
- **Signaling Group:** Use the signaling group configured in the previous step.
- **Number of Members:** Enter the number of trunks desired for the application.

```
display trunk-group 4                                     Page 1 of 21
                                     TRUNK GROUP
Group Number: 4                Group Type: sip                CDR Reports: y
  Group Name: IVR SIP Trunk      COR: 6                TN: 1                TAC: 187
  Direction: two-way            Outgoing Display? n
Dial Access? n                    Night Service:
Queue Length: 0
Service Type: tie                Auth Code? n
                                     Signaling Group: 4
                                     Number of Members: 20
```

- **Numbering Format:** public. This field specifies the format of the calling party number seen to the far-end.

```
display trunk-group 4                                     Page 3 of 21
TRUNK FEATURES
  ACA Assignment? n                Measured: none
                                     Maintenance Tests? y
                                     Numbering Format: public
                                     UII Treatment: service-provider
                                     Replace Restricted Numbers? n
                                     Replace Unavailable Numbers? n
Show ANSWERED BY on Display? y
```

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Routing Calls to the MCS

Use the following commands to configure the CM to route calls to the MCS:

- **change public-unknown-numbering** – Create an entry that will be used by the trunk group defined earlier.
- **change route-pattern X** – Create a route pattern that will route calls to the SIP trunk that connects to the MCS.
- **change aar analysis X** – Create an entry in the AAR Digit Analysis Table for routing calls to the MCS

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Configure MCS

Mutare will configure the MCS for interfacing to the CM. The following section is for informational purposes only.

VBVConfig

[VoIP]

AcceptReinvite=1

SipDefaultTransportProtocol=TCP

SipTCPEnabled=1

[Intel]

SIPDTMFMode=default

SIPSignalingPort=5060

Outbound ANI

DID@<IP Address of MCS>

Outbound Calls

S<phone number>@<IP Address of SES>

Site Configuration

Fill out the form below and return to your Mutare Project Manager.

Avaya CM Information	
IP Address of the MCS	
IP Address of the SES	
Codec	G.711MU or G.711A (Circle one)