



## **Avaya Solution & Interoperability Test Lab**

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# **Application Notes for Mobile Heartbeat MH-CURE with Avaya Aura® Communication Manager and Avaya Aura® Session Manager - Issue 1.0**

### **Abstract**

These Application Notes describe the configuration of Mobile Heartbeat MH-CURE 20.2 with Avaya Aura® Communication Manager 8.1 and Avaya Aura® Session Manager 8.1. MH-CURE connects and mobilizes clinicians and operational staff across the healthcare enterprise. MH-CURE client runs on a smartphone and connects to an MH-CURE application server for its SIP configuration. The MH-CURE client application then registers directly with Avaya Aura® Session Manager as a SIP endpoint through an enterprise wireless LAN.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

# 1. Introduction

These Application Notes describe the configuration of Mobile Heartbeat MH-CURE 20.2 with Avaya Aura® Communication Manager 8.1 and Avaya Aura® Session Manager 8.1. MH-CURE connects and mobilizes clinicians and operational staff across the healthcare enterprise. The MH-CURE client runs on a smartphone and connects to an MH-CURE application server for its SIP configuration. The MH-CURE client application then registers directly with Avaya Aura® Session Manager as a SIP endpoint through an enterprise wireless LAN.

# 2. General Test Approach and Test Results

The interoperability compliance test included feature and serviceability testing. The feature testing focused on establishing calls between the MH-CURE clients and Avaya H.323 / SIP Deskphones and the PSTN, and exercising telephony features, such as Hold/Resume, Mute/Unmute, Call Coverage, Call Transfer, and Conference. Additional telephony features, such as Call Forward, Call Pickup, and Call Park/Unpark, were also verified using Communication Manager Feature Access Codes (FACs).

The serviceability testing focused on verifying that MH-CURE clients came back into service after re-establishing IP network connectivity and rebooting the MH-CURE clients and application server.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in these DevConnect Application Notes included the enablement of supported encryption capabilities in the Avaya products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

For the testing associated with these Application Notes, the interface between Avaya systems and MH-CURE did not include use of any specific encryption features as requested by Mobile Heartbeat.

## 2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- SIP registration of MH-CURE clients with Session Manager.
- Calls between MH-CURE clients and Avaya H.323 / SIP Deskphones with Direct IP Media (Shuffling) enabled and disabled.
- Calls between MH-CURE clients and the PSTN.
- G.711 and G.729 codec support.
- Proper recognition of DTMF tones.
- Basic telephony features, including Hold, Mute, Redial, multiple calls, Blind and Supervised Transfer, and Attended Conference.
- Extended telephony features using Communication Manager FACs for Call Forward, Call Park/Unpark, and Call Pickup.
- Voicemail coverage, MWI support, and logging into voicemail system to retrieve voice messages.
- Proper system recovery after a restart of MH-CURE clients and loss of wireless network connectivity.

## 2.2. Test Results

All test cases passed with the following observation:

- If an outgoing call from an MH-CURE client doesn't complete for any reason (e.g., invalid number, busy, or call blocked), related tones are not played; call simply disappears on the client.

## 2.3. Support

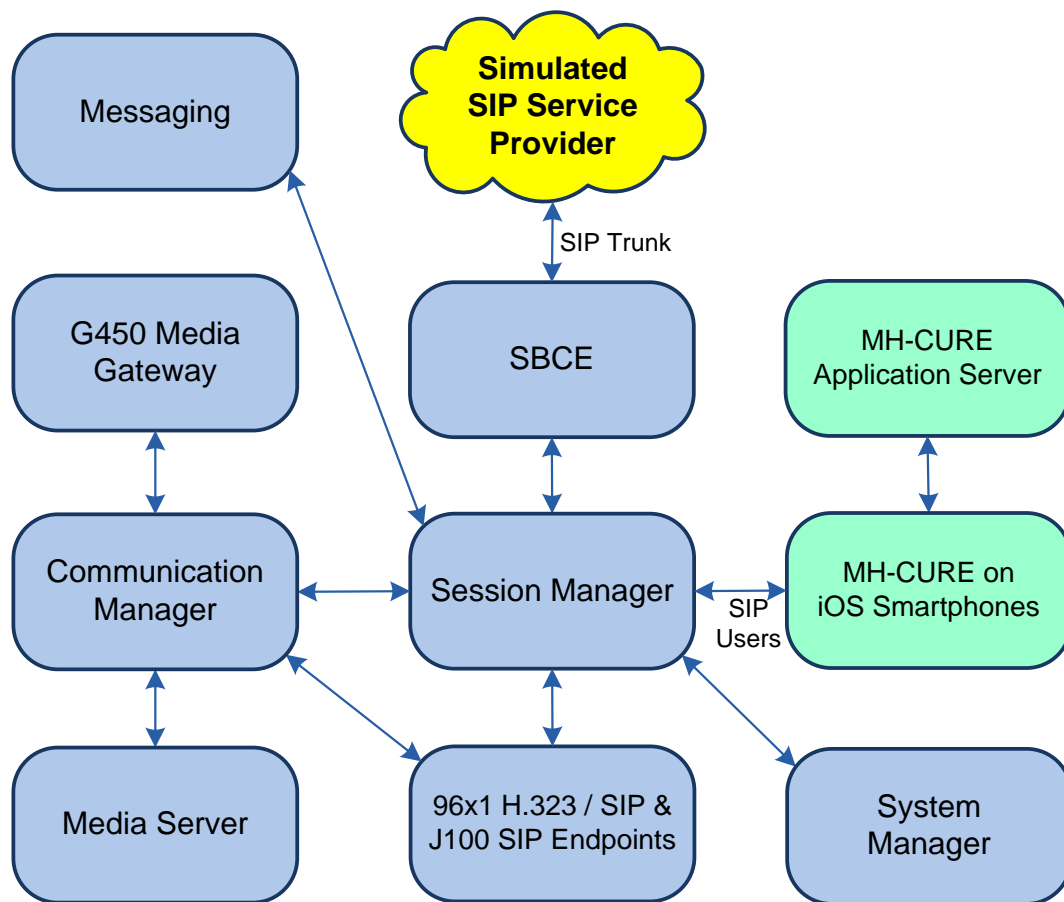
For MH-CURE technical support, contact Mobile Heartbeat technical support via phone or website.

- **Phone:** +1 (781) 238-0000
- **Web:** <https://www.mobileheartbeat.com/contact-us/>

### 3. Reference Configuration

**Figure 1** illustrates a sample configuration with an Avaya SIP-based network that includes the following products:

- Communication Manager with a G450 Media Gateway and Avaya Aura® Media Server providing media resources.
- Session Manager connected to Communication Manager via a SIP trunk.
- Session Manager connected to the PSTN via Avaya Session Border Controller for Enterprise (SBCE).
- Avaya Aura® System Manager used to configure Session Manager and SIP stations on Communication Manager.
- Avaya Messaging serving as the voicemail system.
- Avaya H.323 and SIP Deskphones.
- MH-CURE Clients running on iOS smartphones with wireless LAN device providing network access (not shown).
- MH-CURE Application Server providing SIP configuration to MH-CURE clients.



**Figure 1: Avaya SIP Telephony Network with MH-CURE**

## 4. Equipment and Software Validated

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

| Equipment/Software  | Release/Version  |
|---|--|
| Avaya Aura® Communication Manager                         | 8.1.3.0.1-FP3P1  |
| Avaya G450 Media Gateway                                  | FW 41.24.0   |
| Avaya Aura® Media Server                                  | v.8.0.2.138  |
| Avaya Messaging   | 10.8.2 SP1   |
| Avaya Aura® System Manager                                | 8.1.3.0<br>Build No. – 8.1.0.0.733078<br>Software Update Revision No:<br>8.1.3.0.1012091<br>Feature Pack 3 |
| Avaya Aura® Session Manager                               | 8.1.3.0.813014   |
| Avaya 96x1 Series IP Deskphone                            | 6.8502 (H.323)<br>7.1.11.0.8 (SIP)   |
| Avaya J100 Series SIP Deskphone                           | 4.0.7.1.5  |
| MH-CURE Client running on iOS 14.3 Smartphone             | 20.2.3.5   |
| MH-CURE Application Server running on Windows Server 2016 | 20.2.3.109   |

## 5. Configure Avaya Aura® Communication Manager

This section describes the configuration of a SIP trunk to Session Manager and routing calls to MH-CURE clients. Administration of Communication Manager was performed using the System Access Terminal (SAT). The following configuration is covered:

- **Optional Features** to verify Communication Manager license.
- **IP Node Names** to associate names with IP addresses.
- **IP Codec Set** to specify the codec type used for calls to MH-CURE clients.
- **IP Network Region** to specify the SIP domain name, the IP codec set, and enable IP-IP direct audio (i.e., Shuffling).
- **SIP trunk** for calls towards Session Manager and MH-CURE clients.
- **Private Numbering** to allow the caller's extension to be sent over the SIP trunk.
- **Call Routing** to route calls to MH-CURE clients using AAR.

### 5.1. Verify Communication Manager License

Using the SAT, verify that the Off-PBX Telephones (OPS) option is enabled on the **system-parameters customer-options** form. The license file installed on the system controls these options. If a required feature is not enabled, contact an authorized Avaya sales representative.

On **Page 1**, verify that the number of OPS stations allowed in the system is sufficient for the number of SIP endpoints, including MH-CURE users, that will be deployed. Only basic SIP endpoint licensing is required for this solution.

```
display system-parameters customer-options                                Page 1 of 12
                                OPTIONAL FEATURES

G3 Version: V18                                     Software Package: Enterprise
Location: 2                                           System ID (SID): 1
Platform: 28                                         Module ID (MID): 1

                                USED
Platform Maximum Ports: 48000      91
Maximum Stations: 36000            30
Maximum XMOBILE Stations: 36000    0
Maximum Off-PBX Telephones - EC500: 41000    0
Maximum Off-PBX Telephones - OPS: 41000    16
Maximum Off-PBX Telephones - PBFMC: 41000    0
Maximum Off-PBX Telephones - PVFMC: 41000    0
Maximum Off-PBX Telephones - SCCAN: 0        0
Maximum Survivable Processors: 313      0

(NOTE: You must logoff & login to effect the permission changes.)
```

## 5.2. Administer IP Node Names

In the **IP Node Names** form, assign an IP address and host name for Communication Manager (*procr*) and Session Manager (*devcon-sm*). The host names will be used in other configuration screens of Communication Manager.

```
change node-names ip                                     Page 1 of 2

                                IP NODE NAMES

      Name                IP Address
default                0.0.0.0
devcon-aes             10.64.102.119
devcon-ams             10.64.102.118
devcon-sm             10.64.102.117
procr                 10.64.102.115
procr6                 ::

( 6 of 6 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
```

## 5.3. Administer IP Codec Set

In the **IP Codec Set** form, select the audio codec type supported for calls routed over the SIP trunk to MH-CURE clients. The form is accessed via the **change ip-codec-set 1** command. Note the codec set number since it will be used in the IP Network Region covered in the next section. For the compliance test, G.711MU and G.729 codecs were verified. The following IP codec set is configured with G.711MU.

Media encryption was enabled for Avaya IP Deskphones. MH-CURE clients weren't configured to support SRTP, so the *none* option was also included under **Media Encryption**.

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

                                IP MEDIA PARAMETERS

      Codec Set: 1

      Audio      Silence      Frames      Packet
      Codec      Suppression  Per Pkt    Size (ms)
1: G.711MU          n           2         20
2:
3:
4:
5:
6:
7:

      Media Encryption                                Encrypted SRTP: best-effort
1: 1-srtp-aescm128-hmac80
2: none
3:
4:
5:
```

## 5.4. Administer IP Network Region

In the **IP Network Region** form, the **Authoritative Domain** field is configured to match the domain name configured on Session Manager. In this configuration, the domain name is *avaya.com*. By default, **IP-IP Direct Audio** (shuffling) is enabled to allow audio traffic to be sent directly between MH-CURE clients and IP endpoints without using media resources in the Avaya G450 Media Gateway or Avaya Media Server. The **IP Network Region** form also specifies the **IP Codec Set** to be used for calls routed over the SIP trunk to Session Manager. This codec set is used when its corresponding network region (i.e., IP Network Region 1) is specified in the SIP signaling group.

|                                       |                                      |              |
|---------------------------------------|--------------------------------------|--------------|
| change ip-network-region 1            |                                      | Page 1 of 20 |
| IP NETWORK REGION                     |                                      |              |
| Region: 1                             | NR Group: 1                          |              |
| Location: 1                           | Authoritative Domain: avaya.com      |              |
| Name:                                 | Stub Network Region: n               |              |
| MEDIA PARAMETERS                      |                                      |              |
| Codec Set: 1                          | Intra-region IP-IP Direct Audio: yes |              |
|                                       | Inter-region IP-IP Direct Audio: yes |              |
| UDP Port Min: 2048                    | IP Audio Hairpinning? n              |              |
| UDP Port Max: 50999                   |                                      |              |
| DIFFSERV/TOS PARAMETERS               |                                      |              |
| Call Control PHB Value: 46            |                                      |              |
| Audio PHB Value: 46                   |                                      |              |
| Video PHB Value: 26                   |                                      |              |
| 802.1P/Q PARAMETERS                   |                                      |              |
| Call Control 802.1p Priority: 6       |                                      |              |
| Audio 802.1p Priority: 6              |                                      |              |
| Video 802.1p Priority: 5              |                                      |              |
| AUDIO RESOURCE RESERVATION PARAMETERS |                                      |              |
| H.323 IP ENDPOINTS                    | RSVP Enabled? n                      |              |
| H.323 Link Bounce Recovery? y         |                                      |              |
| Idle Traffic Interval (sec): 20       |                                      |              |
| Keep-Alive Interval (sec): 5          |                                      |              |
| Keep-Alive Count: 5                   |                                      |              |



## 5.5. Administer SIP Trunk to Session Manager

Prior to configuring a SIP trunk group for communication with Session Manager, a SIP signaling group must be configured. Configure the **Signaling Group** form as follows:

- Set the **Group Type** field to *sip*.
- Set the **IMS Enabled** field to *n*.
- The **Transport Method** field was set to *tls*.
- Specify the Ethernet processor (*procr*) of Communication Manager and Session Manager as the two ends of the signaling group in the **Near-end Node Name** field and the **Far-end Node Name** field, respectively. These field values are taken from the **IP Node Names** form in **Section 5.1**.
- Ensure that the TLS port value of *5061* is configured in the **Near-end Listen Port** and the **Far-end Listen Port** fields.
- The preferred codec for the call will be selected from the IP codec set assigned to the IP network region specified in the **Far-end Network Region** field.
- Enter the domain name of Session Manager in the **Far-end Domain** field. In this configuration, the domain name is *avaya.com*.
- The **Direct IP-IP Audio Connections** field was enabled on this form.
- The **DTMF over IP** field should be set to the default value of *rtp-payload*.

Communication Manager supports DTMF transmission using RFC 2833. The default values for the other fields may be used.

| add signaling-group 10  |                                    | Page 1 of 2  |
|---|------------------------------------|--------------|
| SIGNALING GROUP   |                                    |              |
| Group Number: 10  | Group Type: sip                    |              |
| IMS Enabled? n  | Transport Method: tls              |              |
| Q-SIP? n  |                                    |              |
| IP Video? n   | Enforce SIPS URI for SRTP? n       |              |
| Peer Detection Enabled? y   | Peer Server: SM                    | Clustered? n |
| Prepend '+' to Outgoing Calling/Alerting/Diverting/Connected Public Numbers? y  |                                    |              |
| Remove '+' from Incoming Called/Calling/Alerting/Diverting/Connected Numbers? n |                                    |              |
| Alert Incoming SIP Crisis Calls? n  |                                    |              |
| Near-end Node Name: procr   | Far-end Node Name: devcon-sm       |              |
| Near-end Listen Port: 5061  | Far-end Listen Port: 5061          |              |
|   | Far-end Network Region: 1          |              |
| Far-end Domain: avaya.com   |                                    |              |
| Incoming Dialog Loopbacks: eliminate  | Bypass If IP Threshold Exceeded? n |              |
| DTMF over IP: rtp-payload   | RFC 3389 Comfort Noise? n          |              |
| Session Establishment Timer(min): 3   | Direct IP-IP Audio Connections? y  |              |
| Enable Layer 3 Test? y  | IP Audio Hairpinning? n            |              |
| H.323 Station Outgoing Direct Media? n  | Initial IP-IP Direct Media? n      |              |
|   | Alternate Route Timer(sec): 6      |              |

Configure the **Trunk Group** form as shown below. This trunk group is used for SIP calls to MH-CURE clients. Set the **Group Type** field to *sip*, set the **Service Type** field to *tie*, specify the signaling group associated with this trunk group in the **Signaling Group** field, and specify

the **Number of Members** supported by this SIP trunk group. Accept the default values for the remaining fields.

|                          |                                |                |           |
|--------------------------|--------------------------------|----------------|-----------|
| add trunk-group 10       |                                | Page 1 of 5    |           |
| TRUNK GROUP              |                                |                |           |
| Group Number: 10         | <b>Group Type: sip</b>         | CDR Reports: y |           |
| Group Name: To devcon-sm | COR: 1                         | TN: 1          | TAC: 1010 |
| Direction: two-way       | Outgoing Display? n            |                |           |
| Dial Access? n           | Night Service:                 |                |           |
| Queue Length: 0          |                                |                |           |
| <b>Service Type: tie</b> | Auth Code? n                   |                |           |
|                          | Member Assignment Method: auto |                |           |
|                          | <b>Signaling Group: 10</b>     |                |           |
|                          | <b>Number of Members: 10</b>   |                |           |

On **Page 3** of the trunk group form, set the **Numbering Format** field to *private*. This field specifies the format of the calling party number sent to the far-end.

|                                |                                  |                      |  |
|--------------------------------|----------------------------------|----------------------|--|
| add trunk-group 10             |                                  | Page 3 of 5          |  |
| TRUNK FEATURES                 |                                  |                      |  |
| ACA Assignment? n              | Measured: none                   | Maintenance Tests? y |  |
| Suppress # Outpulsing? n       | <b>Numbering Format: private</b> |                      |  |
|                                | UI Treatment: service-provider   |                      |  |
|                                | Maximum Size of UI Contents: 128 |                      |  |
|                                | Replace Restricted Numbers? n    |                      |  |
|                                | Replace Unavailable Numbers? n   |                      |  |
|                                | Hold/Unhold Notifications? y     |                      |  |
|                                | Modify Tandem Calling Number: no |                      |  |
| Show ANSWERED BY on Display? y |                                  |                      |  |

On **Page 4** of the trunk group form, the default settings were used as shown below.

|   |  |             |  |
|---|--|-------------|--|
| add trunk-group 10  |  | Page 5 of 5 |  |
| PROTOCOL VARIATIONS   |  |             |  |
| Mark Users as Phone? n  |  |             |  |
| Prepend '+' to Calling/Alerting/Diverting/Connected Number? n         |  |             |  |
| Send Transferring Party Information? n                                |  |             |  |
| Network Call Redirection? n   |  |             |  |
| Send Diversion Header? n  |  |             |  |
| Support Request History? y  |  |             |  |
| Telephone Event Payload Type:   |  |             |  |
| Convert 180 to 183 for Early Media? n                                 |  |             |  |
| Always Use re-INVITE for Display Updates? n                           |  |             |  |
| Identity for Calling Party Display: P-Asserted-Identity               |  |             |  |
| Block Sending Calling Party Location in INVITE? n                     |  |             |  |
| Accept Redirect to Blank User Destination? n                          |  |             |  |
| Enable Q-SIP? n   |  |             |  |
| Interworking of ISDN Clearing with In-Band Tones: keep-channel-active |  |             |  |
| Request URI Contents: may-have-extra-digits                           |  |             |  |

## 5.6. Configure Private Numbering

Configure the **Numbering – Private Format** form to send the calling party number to the far-end. Add an entry so that local stations with a 5-digit extension beginning with ‘7’ whose calls are routed over any trunk group, including SIP trunk group 10, have their extension sent.

|                            |      |         |         |             |                       |
|----------------------------|------|---------|---------|-------------|-----------------------|
| change private-numbering 0 |      |         |         | Page 1 of 2 |                       |
| NUMBERING - PRIVATE FORMAT |      |         |         |             |                       |
| Ext                        | Ext  | Trk     | Private | Total       |                       |
| Len                        | Code | Grp (s) | Prefix  | Len         |                       |
| 5                          | 7    |         |         | 5           | Total Administered: 1 |
|                            |      |         |         |             | Maximum Entries: 540  |

## 5.7. AAR Call Routing

Configure the uniform dial plan table to route calls using AAR for dialed digits that are 5-digits long and begin with ‘78’. This would cover call routing to MH-CURE client extensions (i.e., 78300 – 78302).

|                           |     |     |        |     |                 |     |
|---------------------------|-----|-----|--------|-----|-----------------|-----|
| change uniform-dialplan 7 |     |     |        |     | Page 1 of 2     |     |
| UNIFORM DIAL PLAN TABLE   |     |     |        |     |                 |     |
|                           |     |     |        |     | Percent Full: 0 |     |
| Matching                  |     |     | Insert |     | Node            |     |
| Pattern                   | Len | Del | Digits | Net | Conv            | Num |
| 78                        | 5   | 0   |        | aar | n               |     |

SIP calls to Session Manager are routed over a SIP trunk via AAR call routing. Configure the AAR analysis form and add an entry that routes digits beginning with “78” to route pattern 10 as shown below. Note that the **Call Type** was set to *lev0*. This route calls to SIP stations and to MH-CURE clients.

|                          |        |       |     |         |      |                 |      |
|--------------------------|--------|-------|-----|---------|------|-----------------|------|
| change aar analysis 7    |        |       |     |         |      | Page 1 of 2     |      |
| AAR DIGIT ANALYSIS TABLE |        |       |     |         |      |                 |      |
| Location: all            |        |       |     |         |      | Percent Full: 2 |      |
|                          | Dialed | Total |     | Route   | Call | Node            | ANI  |
|                          | String | Min   | Max | Pattern | Type | Num             | Reqd |
| 7                        |        | 7     | 7   | 254     | aar  |                 | n    |
| 78                       |        | 5     | 5   | 10      | lev0 |                 | n    |
| 8                        |        | 7     | 7   | 254     | aar  |                 | n    |
| 9                        |        | 7     | 7   | 254     | aar  |                 | n    |
|                          |        |       |     |         |      |                 | n    |
|                          |        |       |     |         |      |                 | n    |

Configure a preference in **Route Pattern 10** to route calls over SIP trunk group 10 as shown below.

|                         |     |               |     |                          |      |     |          |  |  |                            |      |
|-------------------------|-----|---------------|-----|--------------------------|------|-----|----------|--|--|----------------------------|------|
| change route-pattern 10 |     |               |     |                          |      |     |          |  |  | Page 1 of 3                |      |
| Pattern Number: 10      |     |               |     |                          |      |     |          |  |  | Pattern Name: To devcon-sm |      |
| SCCAN? n                |     | Secure SIP? n |     | Used for SIP stations? n |      |     |          |  |  |                            |      |
| Grp                     | FRL | NPA           | Pfx | Hop                      | Toll | No. | Inserted |  |  | DCS/                       | IXC  |
| No                      |     |               | Mrk | Lmt                      | List | Del | Digits   |  |  | QSIG                       |      |
|                         |     |               |     |                          |      |     | Dgts     |  |  | Intw                       |      |
| 1:                      | 10  | 0             |     |                          |      |     |          |  |  | n                          | user |
| 2:                      |     |               |     |                          |      |     |          |  |  | n                          | user |
| 3:                      |     |               |     |                          |      |     |          |  |  | n                          | user |
| 4:                      |     |               |     |                          |      |     |          |  |  | n                          | user |
| 5:                      |     |               |     |                          |      |     |          |  |  | n                          | user |
| 6:                      |     |               |     |                          |      |     |          |  |  | n                          | user |
|                         |     |               |     |                          |      |     |          |  |  |                            |      |
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## 6. Configure Avaya Aura® Session Manager

This section covers the procedure for adding a SIP user in Session Manager. The configuration covers:

- Launch System Manager
- Set Network Transport Protocol for MH-CURE Clients
- Administer SIP User

**Note:** It is assumed that basic configuration of Session Manager has already been performed.

### 6.1. Launch System Manager

Access the System Manager Web interface by using the URL “https://ip-address” in an Internet browser window, where “ip-address” is the IP address of the System Manager server. Log in using the appropriate credentials.

## 6.2. Set Network Transport Protocol for MH-CURE Clients

From the System Manager **Home** screen, select **Elements** → **Routing** → **SIP Entities** and edit the SIP Entity for Session Manager shown below.

The screenshot shows the Avaya Aura System Manager 8.1 interface. The left sidebar is expanded to 'Routing' > 'SIP Entities'. The main area displays the 'SIP Entity Details' for 'devcon-sm'. The 'General' tab is active, showing fields for Name, IP Address, SIP FQDN, Type (Session Manager), Location (Thornton), Outbound Proxy, Time Zone (America/New\_York), Minimum TLS Version (Use Global Setting), and Credential name. The 'Monitoring' tab shows SIP Link Monitoring and CRLF Keep Alive Monitoring both set to 'Use Session Manager Configuration'. Buttons for 'Commit' and 'Cancel' are at the top right.

| Field                      | Value                             |
|----------------------------|-----------------------------------|
| Name                       | devcon-sm                         |
| IP Address                 | 10.64.102.117                     |
| SIP FQDN                   |                                   |
| Type                       | Session Manager                   |
| Location                   | Thornton                          |
| Outbound Proxy             |                                   |
| Time Zone                  | America/New_York                  |
| Minimum TLS Version        | Use Global Setting                |
| Credential name            |                                   |
| SIP Link Monitoring        | Use Session Manager Configuration |
| CRLF Keep Alive Monitoring | Use Session Manager Configuration |

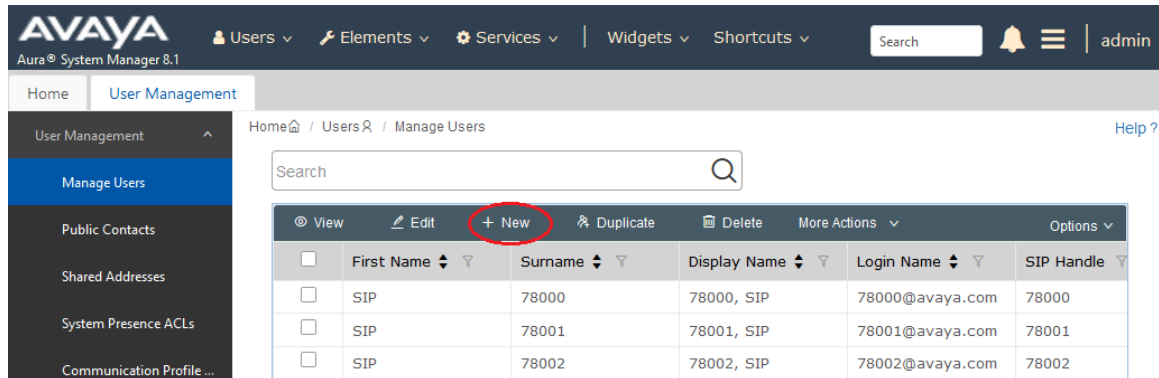
Scroll down to the **Listen Ports** section and verify that the transport network protocol used by MH-CURE clients is specified in the list below. For the compliance test, the solution used TCP network transport.

### Listen Ports

| <div>Add Remove</div>               |              |          |                |                                     |       |
|-------------------------------------|--------------|----------|----------------|-------------------------------------|-------|
| 3 Items <span>Filter: Enable</span> |              |          |                |                                     |       |
| <input type="checkbox"/>            | Listen Ports | Protocol | Default Domain | Endpoint                            | Notes |
| <input type="checkbox"/>            | 5060         | TCP      | avaya.com      | <input checked="" type="checkbox"/> |       |
| <input type="checkbox"/>            | 5060         | UDP      | avaya.com      | <input checked="" type="checkbox"/> |       |
| <input type="checkbox"/>            | 5061         | TLS      | avaya.com      | <input checked="" type="checkbox"/> |       |
| Select : All, None                  |              |          |                |                                     |       |

## 6.3. Administer SIP User

In the subsequent screen (not shown), select **Users** → **User Management** → **Manage Users** to display the **User Management** screen below. Click **New** to add a user.



### 6.3.1. Identity

The **New User Profile** screen is displayed. Enter desired **Last Name** and **First Name**. For **Login Name**, enter `<extension>@<domain>`, where `<extension>` is the desired MH-CURE client SIP extension and `<domain>` is the applicable SIP domain name from **Section 5.4**. Retain the default values in the remaining fields.

**User Profile | Add**

Identity | Communication Profile | Membership | Contacts

Basic Info

Address

LocalizedName

User Provisioning Rule: [v]

\* Last Name: 78300 Last Name (in Latin alphabet characters): 78300

\* First Name: MH-CURE First Name (in Latin alphabet characters): MH-CURE

\* Login Name: 78300@avaya.com Middle Name: Middle Name Of User

[Commit & Continue] [Commit] [Cancel]

### 6.3.2. Communication Profile

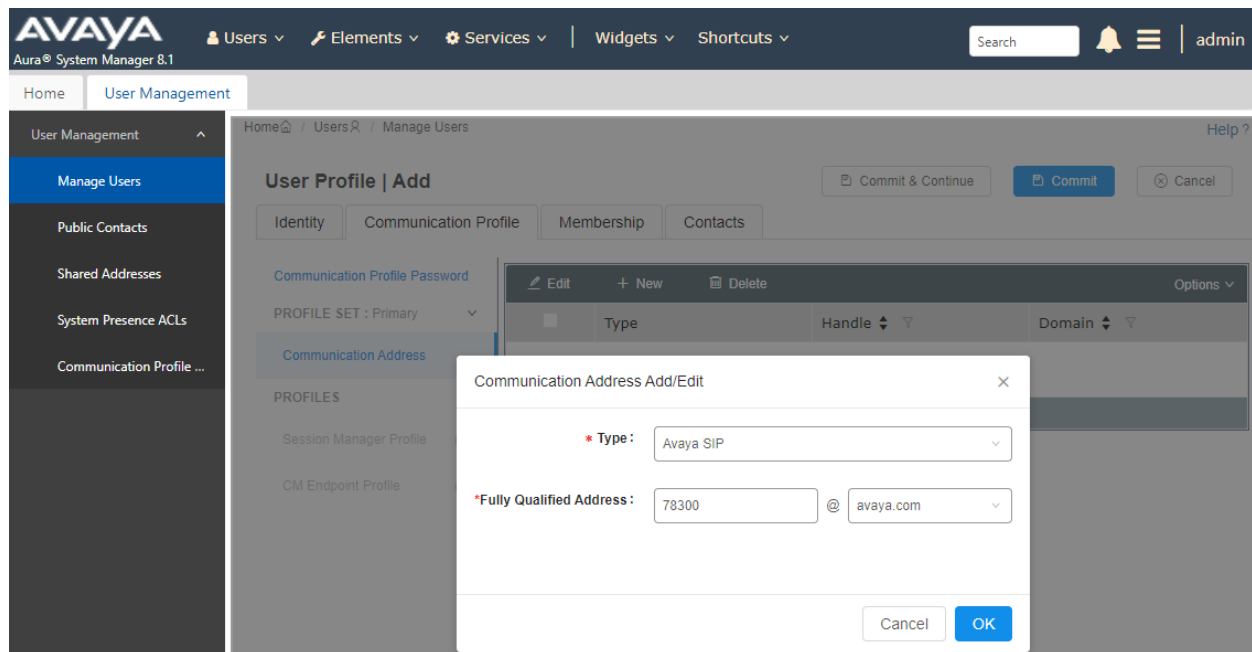
Select the **Communication Profile** tab. Next, click on **Communication Profile Password**. For **Comm-Profile Password** and **Re-enter Comm-Profile Password**, enter the desired password for the SIP user to use for registration. Click **OK**.

The screenshot displays the Avaya Aura System Manager 8.1 web interface. The top navigation bar includes the Avaya logo, 'Aura® System Manager 8.1', and tabs for 'Users', 'Elements', 'Services', 'Widgets', and 'Shortcuts'. A search bar and a user profile 'admin' are also visible. The left sidebar shows a 'User Management' menu with options like 'Manage Users', 'Public Contacts', 'Shared Addresses', 'System Presence ACLs', and 'Communication Profile ...'. The main content area is titled 'User Profile | Add' and has tabs for 'Identity', 'Communication Profile', 'Membership', and 'Contacts'. The 'Communication Profile' tab is active, and the 'Communication Profile Password' sub-tab is selected. A modal dialog box titled 'Comm-Profile Password' is open in the foreground. It contains two password input fields: 'Comm-Profile Password' and 'Re-enter Comm-Profile Password'. The 'Re-enter' field has a red asterisk and a green checkmark, indicating a match. Below the fields is a link 'Generate Comm-Profile Password'. At the bottom of the dialog are 'Cancel' and 'OK' buttons. The background interface shows a list of profiles and a 'Commit & Continue' button.



### 6.3.3. Communication Address

Click on **Communication Address** and then click **New** to add a new entry. The **Communication Address Add/Edit** dialog box is displayed as shown below. For **Type**, retain *Avaya SIP*. For **Fully Qualified Address**, enter the SIP user extension and select the domain name to match the login name from **Section 6.3.1**. Click **OK**.



### 6.3.4. Session Manager Profile

Click on toggle button by **Session Manager Profile**. For **Primary Session Manager**, **Origination Application Sequence**, **Termination Application Sequence**, and **Home Location**, select the values corresponding to the applicable Session Manager and Communication Manager. Retain the default values in the remaining fields.

The screenshot displays the Avaya Aura System Manager 8.1 interface. The top navigation bar includes the Avaya logo, 'Aura® System Manager 8.1', and various menu items like Users, Elements, Services, Widgets, and Shortcuts. A search bar and user profile (admin) are also present. The left sidebar shows the 'User Management' menu with options like Manage Users, Public Contacts, Shared Addresses, System Presence ACLs, and Communication Profile. The main content area is titled 'User Profile | Add' and contains tabs for Identity, Communication Profile, Membership, and Contacts. The 'Communication Profile' tab is active, showing a 'Communication Profile Password' field and a 'PROFILE SET : Primary' dropdown. Below this, the 'PROFILES' section has a 'Session Manager Profile' toggle turned on and a 'CM Endpoint Profile' toggle turned off. The 'SIP Registration' section includes fields for 'Primary Session Manager' (set to 'devcon-sm'), 'Secondary Session Manager' (set to 'Start typing...'), 'Survivability Server' (set to 'Start typing...'), and 'Max. Simultaneous Devices' (set to '3'). There is also a checkbox for 'Block New Registration When Maximum Registrations Active?'. The 'Application Sequences' section shows 'Origination Sequence' and 'Termination Sequence' both set to 'DEVCON-CM App S...'. The 'Call Routing Settings' section is partially visible at the bottom, showing 'Home Location' set to 'Thornton' and 'Conference Factory Set' set to 'Select'.

Scroll down to the **Call Routing Settings** section to configure the **Home Location**.

The screenshot shows the 'Call Routing Settings' section of the Avaya Aura System Manager 8.1 interface. It includes a 'Home Location' field set to 'Thornton' and a 'Conference Factory Set' dropdown menu set to 'Select'.

### 6.3.5. CM Endpoint Profile

Click on the toggle button by **CM Endpoint Profile**. For **System**, select the value corresponding to the applicable Communication Manager. For **Extension**, enter the SIP user extension from **Section 6.3.1**. For **Template**, select *9641SIP\_DEFAULT\_CM\_8\_1*. For **Port**, click and select *IP*. Retain the default values in the remaining fields. Click on **Endpoint Editor** (i.e., Edit icon in **Extension** field) to configure the **Coverage Path**.

The screenshot displays the Avaya Aura System Manager 8.1 interface. The top navigation bar includes the Avaya logo, navigation links for Users, Elements, Services, Widgets, and Shortcuts, a search bar, and a user profile icon labeled 'admin'. The left sidebar shows the 'User Management' menu with options like 'Manage Users', 'Public Contacts', 'Shared Addresses', 'System Presence ACLs', and 'Communication Profile ...'. The main content area is titled 'User Profile | Add' and features tabs for 'Identity', 'Communication Profile', 'Membership', and 'Contacts'. The 'Communication Profile' tab is active, showing a 'Communication Profile Password' section with a dropdown for 'PROFILE SET : Primary' and a 'Communication Address' field. Below this, the 'PROFILES' section has two toggle switches: 'Session Manager Profile' (off) and 'CM Endpoint Profile' (on). The main configuration area contains several fields: 'System' (dropdown, value: devcon-cm), 'Profile Type' (dropdown, value: Endpoint), 'Extension' (text input, value: 78300), 'Template' (text input, value: 9641SIP\_DEFAULT\_CM\_8\_1), 'Set Type' (text input, value: 9641SIP), 'Security Code' (text input, placeholder: Enter Security Code), 'Port' (dropdown, value: IP), 'Voice Mail Number' (text input), 'Preferred Handle' (dropdown, value: Select), 'Calculate Route Pattern' (checkbox, checked), 'SIP URI' (dropdown, value: Select), 'Delete on Unassign from User or on Delete User' (checkbox, checked), 'Override Endpoint Name and Localized Name' (checkbox, checked), and 'Allow H.323 and SIP Endpoint Dual Registration' (checkbox, unchecked). At the top right of the form, there are buttons for 'Commit & Continue', 'Commit', and 'Cancel'.

Navigate to the **General Options** tab and set the **Coverage Path 1** field to the voicemail coverage path. This provides voicemail coverage for the SIP user. In this example, coverage path 15 was used.

**New Endpoint** Help ?

[Done](#)

[\[Save As Template\]](#)

---

\* **System**  \* **Extension**  [Display Extension Ranges](#)

\* **Template**  \* **Set Type**

\* **Port**  \* **Security Code**

**Name**

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**General Options (G) \*** **Feature Options (F)** **Site Data (S)** **Abbreviated Call Dialing (A)** **Enhanced Call Fwd (E)**

**Button Assignment (B)** **Profile Settings (P)** **Group Membership (M)**

\* **Class of Restriction (COR)**  \* **Class Of Service (COS)**

\* **Emergency Location Ext**  \* **Message Lamp Ext.**

\* **Tenant Number**

\* **SIP Trunk**  \* **Type of 3PCC Enabled**

**Coverage Path 1**  \* **Coverage Path 2**

**Lock Message** ☐

**Localized Display Name**

**Multibyte Language**  \* **Enable Reachability for Station Domain Control**

In the **Button Assignment** tab, select the **Main Buttons** sub-tab and accept the default settings with three call appearances.

**General Options (G) \*** **Feature Options (F)** **Site Data (S)** **Abbreviated Call Dialing (A)** **Enhanced Call Fwd (E)**

**Button Assignment (B)** **Profile Settings (P)** **Group Membership (M)**

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**Main Buttons** **Feature Buttons** **Button Modules** **Phone View**

**Endpoint Configurations**

| Favorite                   | Button Label         |
|----------------------------|----------------------|
| 1 <input type="checkbox"/> | <input type="text"/> |
| 2 <input type="checkbox"/> | <input type="text"/> |
| 3 <input type="checkbox"/> | <input type="text"/> |
| 4 <input type="checkbox"/> | <input type="text"/> |
| 5 <input type="checkbox"/> | <input type="text"/> |
| 6 <input type="checkbox"/> | <input type="text"/> |
| 7 <input type="checkbox"/> | <input type="text"/> |
| 8 <input type="checkbox"/> | <input type="text"/> |

**Button Configurations**

| Button Feature                           | Argument-1           | Argument-2           | Argument-3           |
|--|----------------------|----------------------|----------------------|
| call-appr <input type="text" value="v"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| call-appr <input type="text" value="v"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| call-appr <input type="text" value="v"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| None <input type="text" value="v"/>      | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| None <input type="text" value="v"/>      | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| None <input type="text" value="v"/>      | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| None <input type="text" value="v"/>      | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| None <input type="text" value="v"/>      | <input type="text"/> | <input type="text"/> | <input type="text"/> |

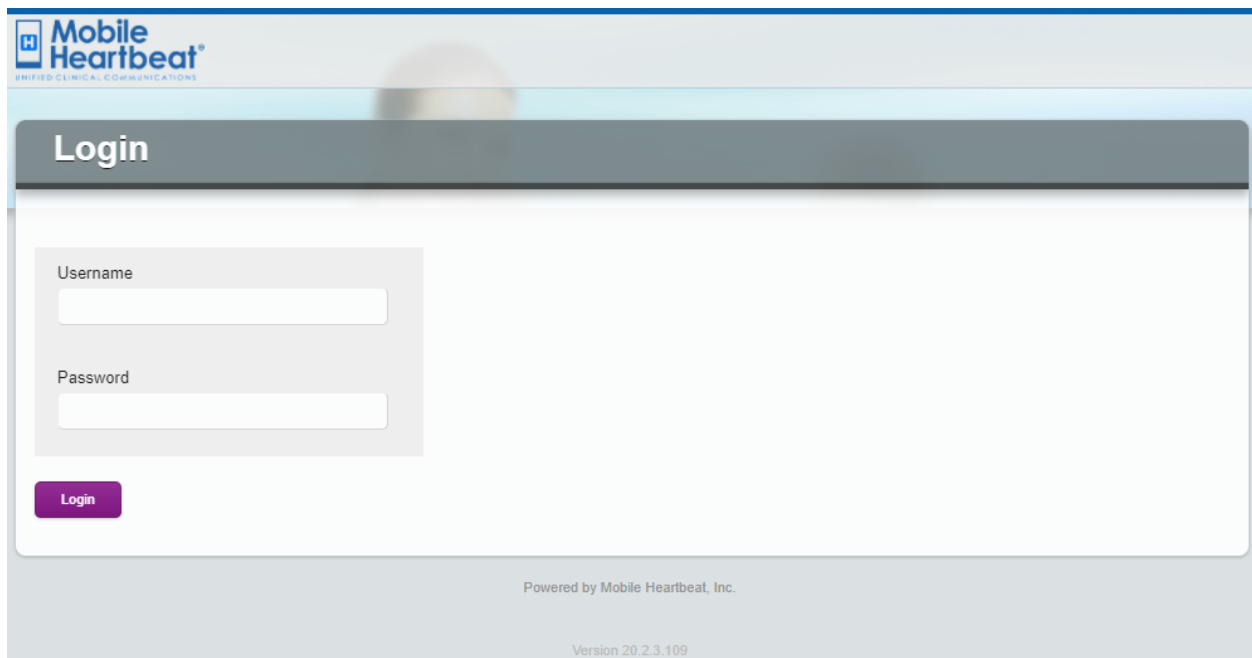
## 7. Configure MH-CURE

This section provides the procedure for configuring MH-CURE to provide the clients with SIP connectivity to Session Manager. Configuration for MH-CURE is performed via MH-CURE Administrative web User Interface.

- Log into MH-CURE Web Admin Tool
- Configure MH-CURE for SIP Endpoint Service
- Configure Voicemail Number
- Configure MH-CURE Users

### 7.1. Log into MH-CURE Web Admin Tool

Access the MH-CURE Web Admin Tool by using the URL “**Error! Hyperlink reference not valid.**” in an Internet browser, where *<FQDN>* is the FQDN of the MH-CURE Application Server. Log in using appropriate credentials.



The screenshot displays the login interface of the MH-CURE Web Admin Tool. At the top left, the 'Mobile Heartbeat' logo is visible, with the tagline 'UNIFIED CLINICAL COMMUNICATIONS' underneath. The main heading 'Login' is centered at the top of the form area. Below this, there are two input fields: 'Username' and 'Password', each with a corresponding text box. A purple 'Login' button is positioned below the password field. At the bottom of the page, it states 'Powered by Mobile Heartbeat, Inc.' and 'Version 20.2.3.109'.

## 7.2. Configure MH-CURE for SIP Endpoint Service

Click **Hospitals** in top menu. On the left pane, expand the Hospital tree, and click on the hospital name (e.g., MH-CURE). Click on the **Settings...** button.

The screenshot shows the 'Mobile Heartbeat' web application interface. The top navigation bar includes 'Patients', 'Hospitals', 'Users', 'Settings', 'Reports', 'Monitors', 'Tools', and 'Logout'. The left sidebar shows a tree view with 'Hospitals' expanded, and 'MH-CURE' selected. The main content area is titled 'Manage Hospital - MHCURE' and contains the following fields and buttons:

- Name \*:** MHCURE
- Abbreviation:** MHCURE  
Used as the display name in clients
- QuickLinks (Personal Devices):** avaya8-p
- Buttons:** Update, Delete

Below the main form is the 'Add Units' section, which includes a text input field and an 'Add Units' button. The instruction below the input field reads: 'Use a comma separated list to add multiple Units'.

At the bottom is the 'Hospital Settings' section, which includes a 'Settings...' button and a 'Manage External Mappings...' button.

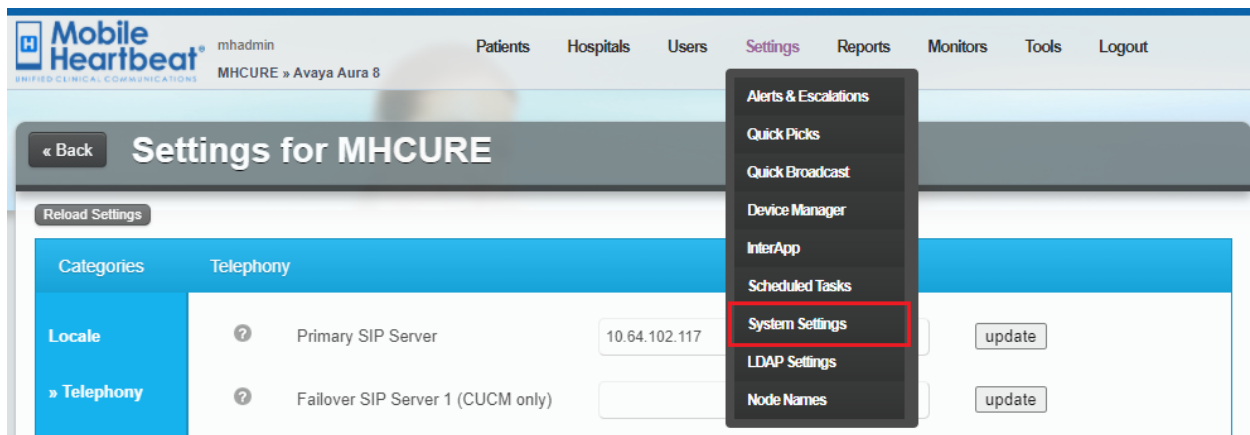
Click **Telephony** in the left pane. Set **Primary SIP Server** to the Session Manager IP address (e.g., *10.64.102.117*) from **Section 5.1**. Click **Update** to the right of the field.

The screenshot shows the 'Settings for MHCURE' interface. At the top, there is a navigation bar with the Mobile Heartbeat logo, user 'mhadmin', and various menu items: Patients, Hospitals, Users, Settings, Reports, Monitors, Tools, and Logout. Below this, a 'Settings for MHCURE' header includes a '« Back' button. A 'Reload Settings' button is located above the settings table. The table has two main sections: 'Categories' and 'Telephony'. Under 'Categories', there is a 'Locale' section and a '» Telephony' section. The 'Telephony' section contains several rows of settings, each with a help icon (?), a label, a value field, and an 'update' button. The 'Primary SIP Server' is currently set to '10.64.102.117'. Below these are three 'Failover SIP Server' entries, all currently empty. A section titled 'Acrobatis SIPIS' follows, containing three rows: 'Use SIPIS for Personal Devices' (set to 'No'), 'SIPIS Server' (empty), and 'SIPIS Registration Server' (empty).

| Categories         | Telephony  |
|--------------------|--|
| <b>Locale</b>      |  |
| <b>» Telephony</b> |  |
|                    | <div><div>?</div><div>Primary SIP Server</div><div>10.64.102.117</div><div>update</div></div>    |
|                    | <div><div>?</div><div>Failover SIP Server 1 (CUCM only)</div><div></div><div>update</div></div>  |
|                    | <div><div>?</div><div>Failover SIP Server 2 (CUCM only)</div><div></div><div>update</div></div>  |
|                    | <div><div>?</div><div>Failover SIP Server 3 (CUCM only)</div><div></div><div>update</div></div>  |
|                    | <b>Acrobatis SIPIS</b>   |
|                    | <div><div>?</div><div>Use SIPIS for Personal Devices</div><div>No ▾</div><div>update</div></div> |
|                    | <div><div>?</div><div>SIPIS Server</div><div></div><div>update</div></div>                       |
|                    | <div><div>?</div><div>SIPIS Registration Server</div><div></div><div>update</div></div>          |

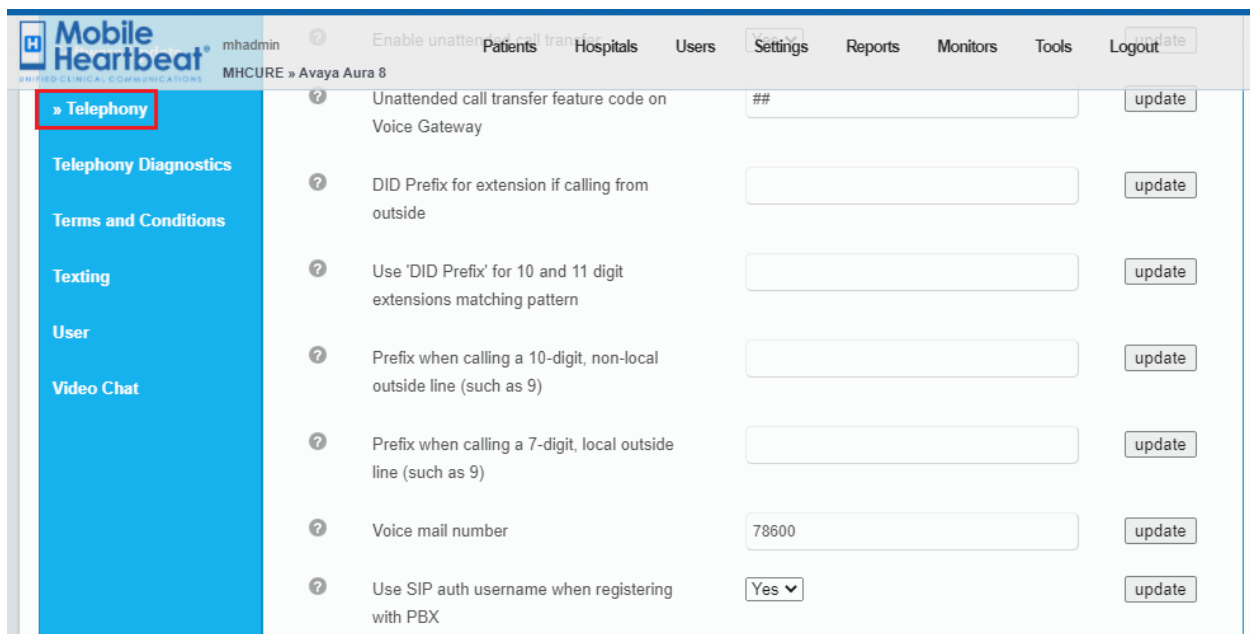
## 7.3. Configure Voicemail Number

To configure the voicemail number, first navigate to **Settings** → **System Settings**.



Next, select **Telephony** in left pane. Scroll down and locate the **Voice mail number** field. Type in the voicemail pilot number. For the compliance test, 78600 was the voicemail pilot number for Avaya Messaging.

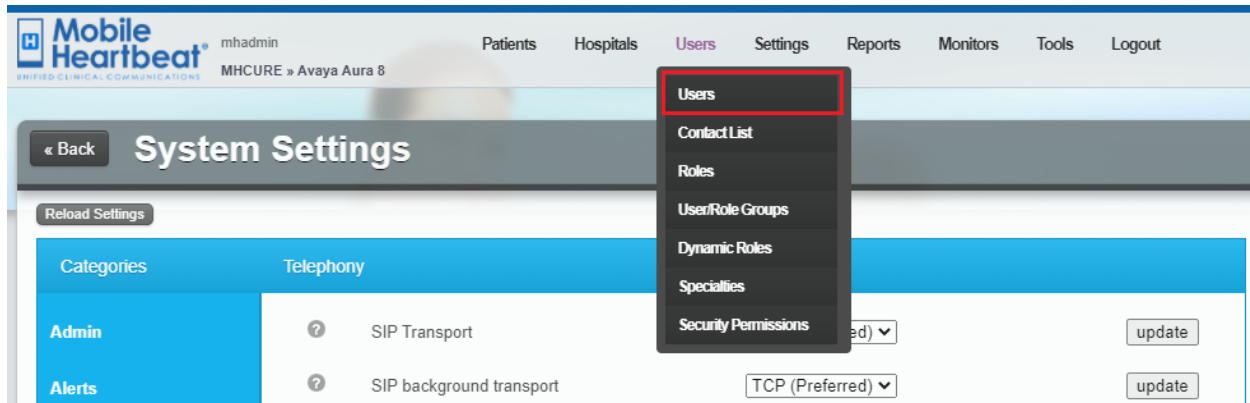
**Note:** The **Telephony** page also provides the configuration of transport protocol (e.g., TCP) and the codec settings. The default settings were used, but to allow G.729 codec, the codec must be enabled.



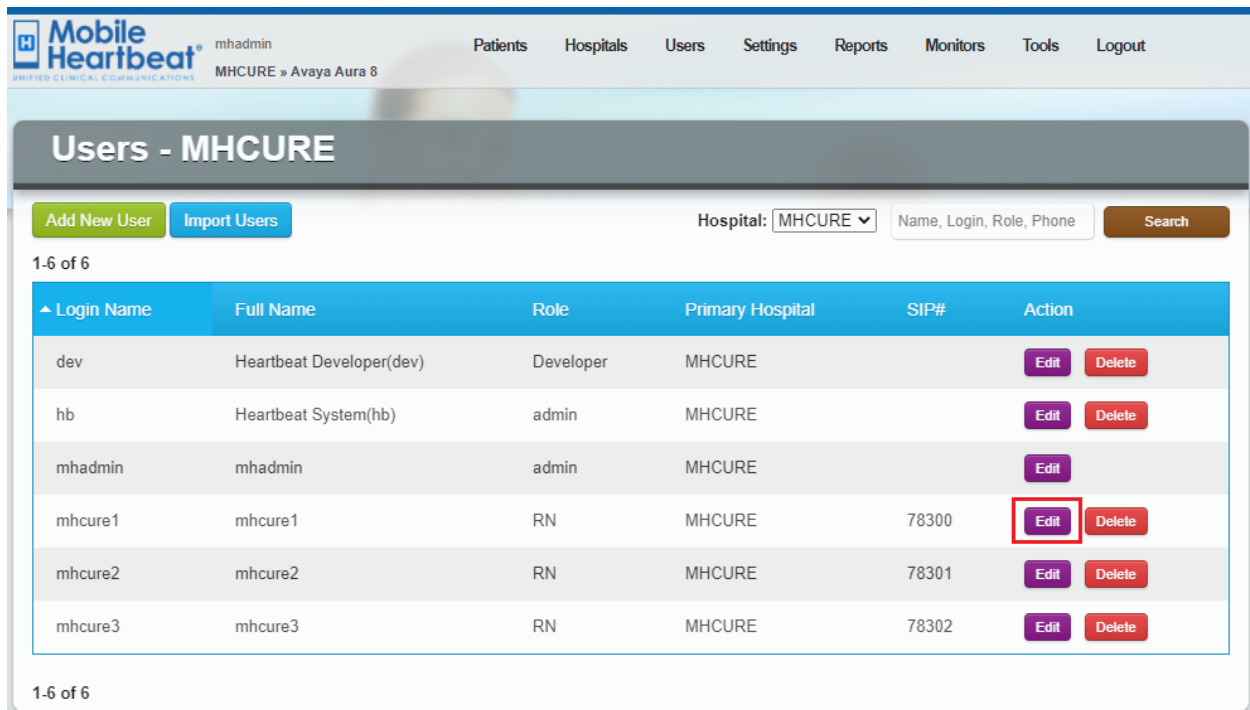


## 7.4. Configure MH-CURE Users

To add or modify an existing user, first navigate to **Users** → **Users** from the top menu.



Next, add a new user or edit an existing user. In this example, an existing user will be modified. Click the **Edit** button associated with the **mhcure1** user.



Configure the user extension as configured in **Section 6.3.1** for **SIP Number** and **SIP Auth Username**. Configure the **SIP Password** as configured in **Section 6.3.2**. Once done, click **Update** at the bottom of the screen (not shown).

|                    |                                     |
|--------------------|-------------------------------------|
| SIP Number:        | <input type="text" value="78300"/>  |
| SIP Password:      | <input type="text" value="123456"/> |
| SIP Auth Username: | <input type="text" value="78300"/>  |

## 8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Aura® Communication Manager, Avaya Aura® Session Manager, and MH-CURE.

1. Verify that MH-CURE clients have successfully registered with Session Manager. In System Manager, navigate to **Elements → Session Manager → System Status → User Registrations** to check the registration status as shown below.

**AVAYA** Aura® System Manager 8.1

Users ▾ Elements ▾ Services ▾ Widgets ▾ Shortcuts ▾ Search [ ] admin

Home Session Manager

Session Manager ▾

- Dashboard
- Session Manager Ad...
- Global Settings
- Communication Prof...
- Network Configur...
- Device and Locati...
- Application Confi...
- System Status ▴
- SIP Entity Monit...
- Managed Band...
- Security Module...
- SIP Firewall Status
- Registration Su...
- User Registratio...

### User Registrations

Select rows to send notifications to devices. Click on Details column for complete registration status.

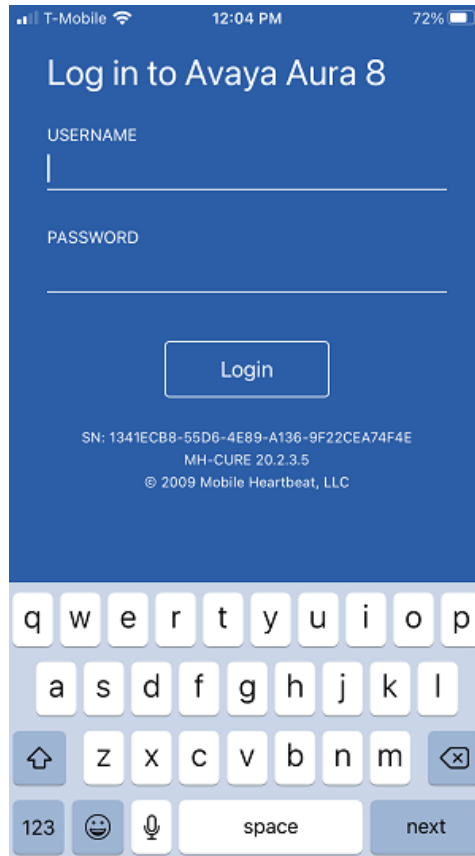
View ▾ Default Export Force Unregister AST Device Notifications: Reboot Reload ▾ Fallback As of 11:52 AM Customize ▾ Advanced Search ▾

19 Items Show 15 ▾ Filter: Enable

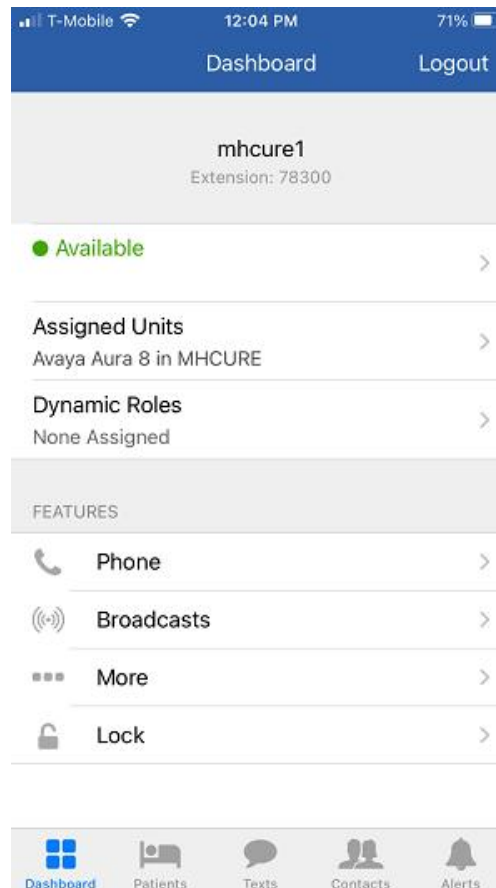
| <input type="checkbox"/> | Details | Address         | First Name | Last Name | Actual Location | IP Address      | Remote Office            | Shared Control           | Simult. Devices | AST Device                          | Registered                               |                          |                          |                          |
|--------------------------|---------|-----------------|------------|-----------|-----------------|-----------------|--------------------------|--------------------------|-----------------|-------------------------------------|--|--------------------------|--------------------------|--------------------------|
|                          |         |                 |            |           |                 |                 |                          |                          |                 |                                     | Prim                                     | Sec                      | Surv                     | Visiting                 |
| <input type="checkbox"/> | ► Show  | 78000@avaya.com | SIP        | 78000     | ---             | 192.168.100.54  | <input type="checkbox"/> | <input type="checkbox"/> | 1/1             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> (AC) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | ► Show  | 78300@avaya.com | MH-CURE    | 78300     | ---             | 192.168.100.197 | <input type="checkbox"/> | <input type="checkbox"/> | 1/1             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> (AC) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | ► Show  | 78030@avaya.com | Agent      | 78030     | ---             | 192.168.100.49  | <input type="checkbox"/> | <input type="checkbox"/> | 1/1             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> (AC) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | ► Show  | 78003@avaya.com | SIP        | 78003     | ---             | 192.168.100.64  | <input type="checkbox"/> | <input type="checkbox"/> | 1/1             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> (AC) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | ► Show  | ---             | Equinox    | 78040     | ---             | ---             | <input type="checkbox"/> | <input type="checkbox"/> | 0/1             | <input type="checkbox"/>            | <input type="checkbox"/>                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | ► Show  | 78301@avaya.com | MH-CURE    | 78301     | ---             | 192.168.100.199 | <input type="checkbox"/> | <input type="checkbox"/> | 1/1             | <input type="checkbox"/>            | <input checked="" type="checkbox"/> (AC) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | ► Show  | 78001@avaya.com | SIP        | 78001     | ---             | 192.168.100.58  | <input type="checkbox"/> | <input type="checkbox"/> | 1/1             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> (AC) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Select : All, None Page 1 of 2

2. From an iOS mobile device, launch the MH-CURE app and login with the appropriate credentials.



3. Once logged in, verify the MH-CURE client has registered with Session Manager. The MH-CURE should specify its SIP extension and a status of *Available*.



4. Establish a call from the MH-CURE client to an Avaya IP deskphone. While the call is active, verify two-way audio and exercise basic telephony features.

## 9. Conclusion

These Application Notes describe the integration of MH-CURE with Avaya Aura® Communication Manager and Avaya Aura® Session Manager. MH-CURE clients successfully registered with Avaya Aura® Session Manager as a SIP endpoint through an enterprise wireless LAN. Incoming and outgoing calls were placed to/from MH-CURE clients and telephony features were exercised. All test cases passed with observations noted in **Section 2.2**.

## 10. References

This section references the Avaya and Mobile Heartbeat documentation relevant to these Application Notes.

- [1] *Administering Avaya Aura® Communication Manager*, Release 8.1.x, Issue 8, November 2020, available at <http://support.avaya.com>.
- [2] *Administering Avaya Aura® System Manager for Release 8.1.x*, Release 8.1.x, Issue 8, November 2020, available at <http://support.avaya.com>.
- [3] *Administering Avaya Aura® Session Manager*, Release 8.1.x, Issue 7, October 2020, available at <http://support.avaya.com>.
- [4] *MH-CURE 20.2 Web Admin Guide*, MH00333, Revision 1.0.
- [5] *MH-CURE 20.2 iOS Shared User Guide*, MH00324, Revision 1.0.

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