Avaya Solution & Interoperability Test Lab

Application Notes for 911inform Connected Building with Avaya Aura® Communication Manager 8.1.3 and Avaya Aura® Application Enablement Services 8.1.3 using Crisis Alert – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for 911inform Connected Building to interoperate with Avaya Aura® Communication Manager 8.1.3 and Avaya Aura® Application Enablement Services 8.1.3 using Crisis Alert. 911inform Connected Building is an emergency notification and management application.

In the compliance testing, 911inform Connected Building used the Device, Media, and Call Control interface from Avaya Aura® Application Enablement Services and the Crisis Alert feature to provide monitoring of emergency calls.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as any 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 steps required for 911inform Connected Building to interoperate with Avaya Aura® Communication Manager 8.1.3 and Avaya Aura® Application Enablement Services 8.1.3 using Crisis Alert. Connected Building is an emergency notification and management application.

In the compliance testing, Connected Building used the Device, Media, and Call Control (DMCC) interface from Application Enablement Services and the Crisis Alert feature to provide monitoring of emergency calls.

Connected Building is a 911inform offer that consists of the DMCC-CA package running on a local enterprise server to interface with Application Enablement Services using the DMCC Java method and communicates with the 911inform Cloud Service on the public cloud hosted on Amazon Web Services.

The DMCC interface is used by Connected Building to register a virtual IP softphone with Communication Manager for monitoring of emergency calls. The virtual IP softphone is configured with a Crisis Alert feature button, such that when a Communication Manager user dials an emergency call, the virtual IP softphone receives events associated with audible and visual alerts.

Upon notified of an emergency call via DMCC, Connected Building sends the emergency call information including caller extension along with pre-assigned organizational ID to the Cloud Service. The Cloud Service then sends emergency notification to pre-configured notification users' email and/or SMS destinations, and provides browser access for viewing of applicable building and location map associated with the organizational ID along with highlighting of room associated with the emergency caller extension.

2. General Test Approach and Test Results

The feature test cases were performed both automatically and manually. Upon start of the Connected Building application, the application automatically used DMCC to register the virtual IP softphone. Emergency calls were placed manually from users on Communication Manager to the simulated SIP Service Provider.

The serviceability test cases were performed manually by disconnecting and reconnecting the Ethernet connection to Connected Building.

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 Application Enablement Services and Connected Building did not include use of any specific encryption features as requested by 911inform.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying the following on Connected Building:

- Use of DMCC registration services to register and un-register virtual IP softphone.
- Use of DMCC physical devices services and monitoring services to obtain audio and visual alerts events for emergency calls.
- Proper handling of emergency call scenarios involving emergency callers from different users, simultaneous emergency calls, and simultaneous emergency notifications.

The serviceability testing focused on verifying the ability of Connected Building to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet connection to the Connected Building server.

2.2. Test Results

All test cases were executed and verified. The following were observations on Connected Building from the compliance testing.

- When the Every User Responds parameter on the system-parameters crisis-alert form was disabled on Communication Manager in **Section 5.3**, then the Crisis Alert notification was acknowledged by Connected Building via the virtual IP softphone and cleared at all other user stations faster than the other user stations can view the crisis alert details. Therefore, the configuration of the parameter needs to take this observation into account.

2.3. Support

Technical support on Connected Building can be obtained through the following:

- **Phone:** (833) 333-1911
- **Email:** support@911inform.com

3. Reference Configuration

The configuration used for the compliance testing is shown in **Figure 1**. The detailed administration of basic connectivity between Communication Manager and Application Enablement Services is not the focus of these Application Notes and will not be described.

The user extensions used in the compliance testing and their associated rooms are shown in the table below.

User Extensions	Room
65001 (H.323), 66002 (SIP)	301
65002 (H.323), 66007 (SIP)	302

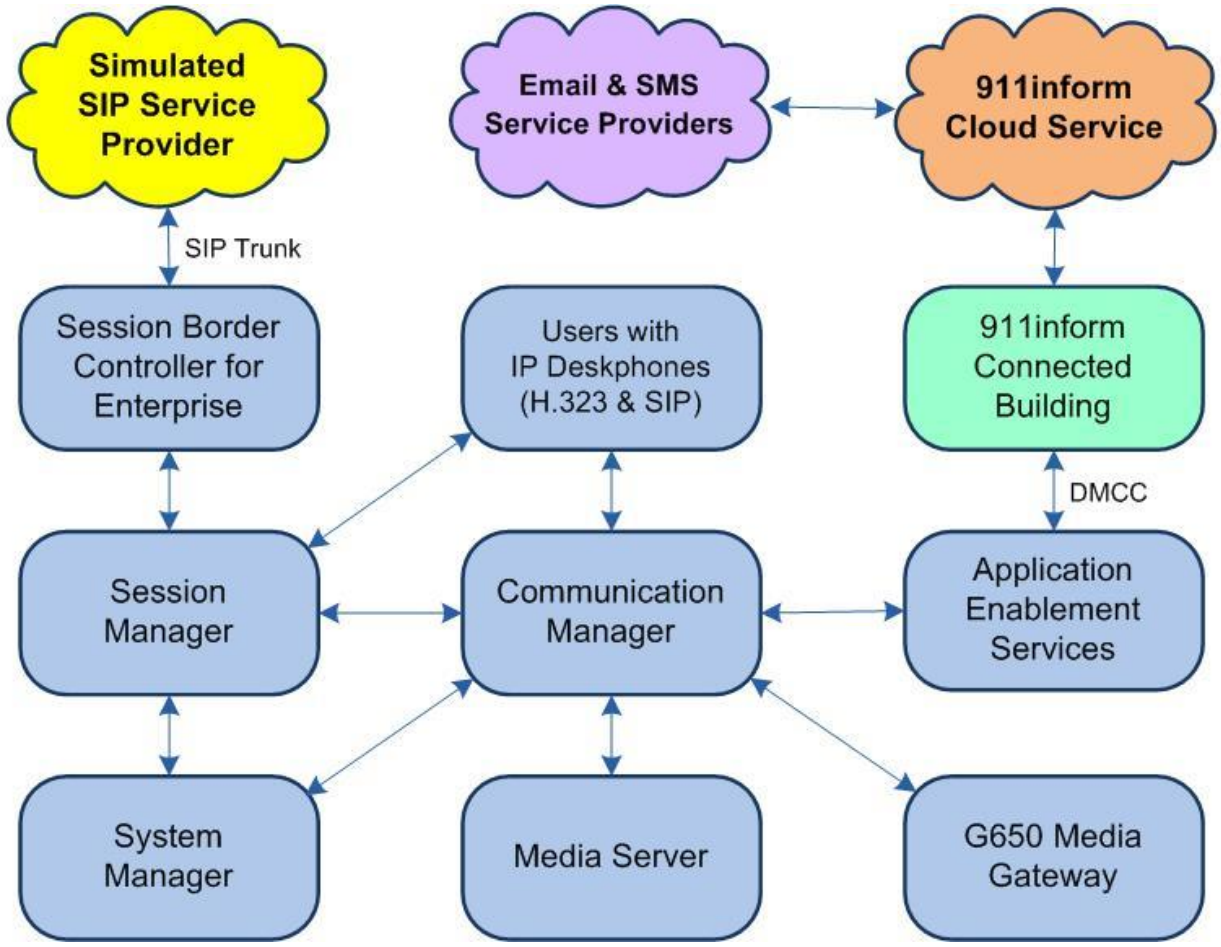


Figure 1: Compliance Testing Configuration

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 in Virtual Environment	8.1.3 (8.1.3.0.1.890.26685)
Avaya G650 Media Gateway	NA
Avaya Aura® Media Server in Virtual Environment	8.0.2.138
Avaya Aura® Application Enablement Services in Virtual Environment	8.1.3 (8.1.3.0.0.25-0)
Avaya Aura® Session Manager in Virtual Environment	8.1.3 (8.1.3.0.813014)
Avaya Aura® System Manager in Virtual Environment	8.1.3 (8.1.3.0.1012091)
Avaya Session Border Controller for Enterprise in Virtual Environment	8.1.1 (8.1.1.0-19390)
Avaya 9611G & J159 IP Deskphone (H.323)	6.8502
Avaya 9641G IP Deskphone (SIP)	7.1.11.0.8
Avaya J169 IP Deskphone (SIP)	4.0.7.1.5
911inform Connected Building on Ubuntu • DMCC-CA • Avaya DMCC Java	NA 18.04.5 LTS 1.2.1 8.1.0.0.0.9
911inform Cloud Service	4.0.0

5. Configure Avaya Aura® Communication Manager

This section provides the procedures for configuring Communication Manager. The procedures include the following areas:

- Administer virtual IP softphone
- Administer ARS analysis
- Administer system parameters crisis alert

5.1. Administer Virtual IP Softphone

Add a virtual softphone using the "add station n" command, where "n" is an available extension number. Enter the following values for the specified fields and retain the default values for the remaining fields.

- **Type:** "9630"
- **Name:** A descriptive name.
- **Security Code:** A desired value.
- **IP SoftPhone:** "y"

```
add station 65991                                                Page   1 of   6
                                     STATION

Extension: 65991                        Lock Messages? n               BCC: 0
     Type: 9630                         Security Code: 123456           TN: 1
     Port: IP                         Coverage Path 1:                COR: 1
     Name: 911inform DMCC             Coverage Path 2:                 COS: 1
Unicode Name? n                     Hunt-to Station:                Tests? y
STATION OPTIONS
                                          Time of Day Lock Table:
              Loss Group: 19         Personalized Ringing Pattern: 1
                                               Message Lamp Ext: 65991
            Speakerphone: 2-way               Mute Button Enabled? y
        Display Language: English                  Button Modules: 0
 Survivable GK Node Name:
          Survivable COR: internal              Media Complex Ext:
   Survivable Trunk Dest? y                          IP SoftPhone? y

                                               IP Video Softphone? n
                              Short/Prefixed Registration Allowed: default

                                             Customizable Labels? y
```

Navigate to **Page 4** and assign a "crss-alert" button for notification of emergency calls.

```
add station 65991                                                Page   4 of   5
                                     STATION
 SITE DATA
       Room:                                              Headset? n
       Jack:                                              Speaker? n
      Cable:                                             Mounting: d
      Floor:                                         Cord Length: 0
   Building:                                           Set Color:

ABBREVIATED DIALING
     List1:                     List2:                     List3:


BUTTON ASSIGNMENTS
 1:call-appr                              5:crss-alert
 2:call-appr                              6:
 3:call-appr                              7:
 4:                              8:

    voice-mail
```

5.2. Administer ARS Analysis

Use the "change ars analysis n" command, where "n" is the applicable emergency call digit string, in this case "911". Note that the actual dialed string can vary depending on customer configuration. In the compliance testing, "911" was dialed and matches as is to the ARS dialed string entry "911" as part of the ARS/AAR Dialing without FAC feature.

Locate the entry associated with the emergency call digit string and make certain **Call Type** is set to "alrt", which enables Crisis Alert notification.

```
change ars analysis 911                                          Page   1 of   2
                            ARS DIGIT ANALYSIS TABLE
                                  Location:  all           Percent Full:    1

          Dialed           Total     Route    Call   Node  ANI
          String          Min  Max  Pattern   Type   Num   Reqd
    911                   3    3     911      alrt         n
```

5.3. Administer System Parameters Crisis Alert

Use the "change system-parameters crisis-alert" command, and set **Every User Responds** to the desired setting.

When the parameter is enabled, all users with crisis alert button are notified and must clear the alert for every emergency alert.

When the parameter is disabled, all users with crisis alert button are notified and only one user needs to acknowledge an alert. When the alert is acknowledged by one user, the alert is cleared at all other users except the one that acknowledged the alert.

```
change system-parameters crisis-alert                          Page   1 of   1
                         CRISIS ALERT SYSTEM PARAMETERS

ALERT STATION
    Every User Responds? y

ALERT PAGER
            Alert Pager? n
```

6. Configure Avaya Aura® Application Enablement Services

This section provides the procedures for configuring Application Enablement Services. The procedures include the following areas:

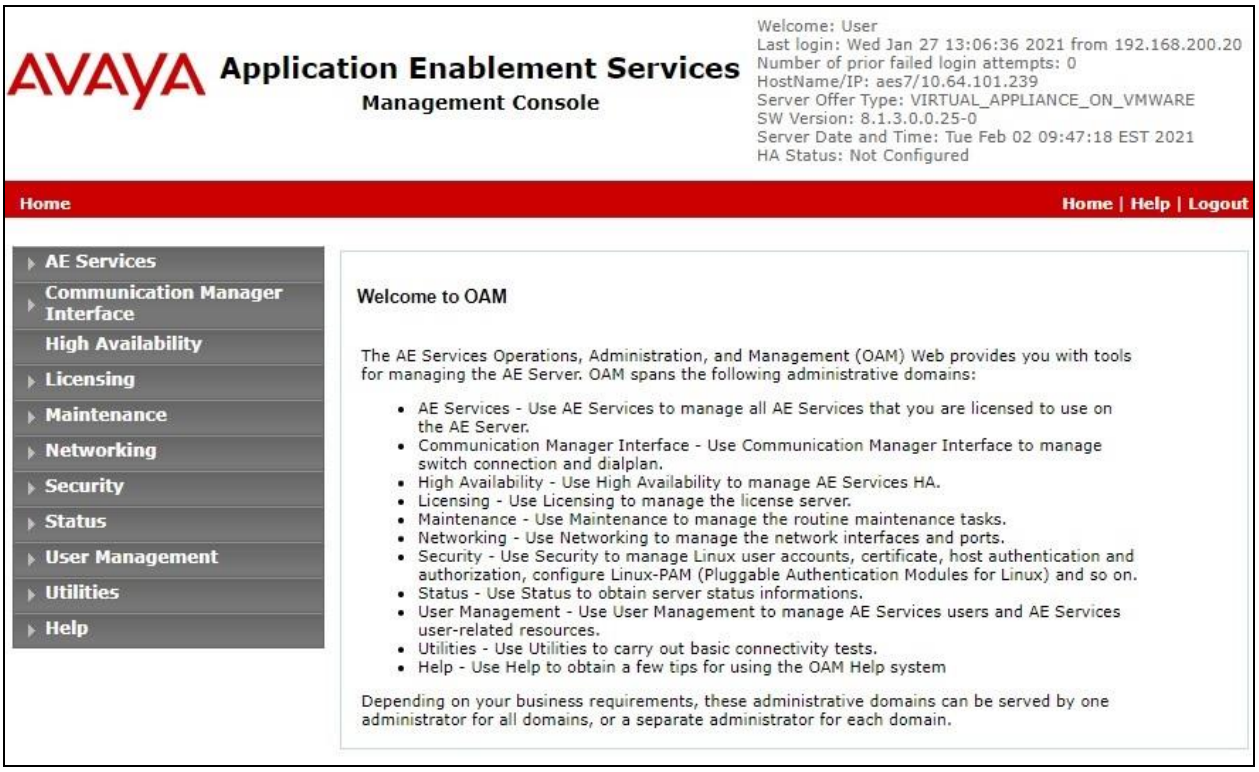
- Launch OAM interface
- Verify license
- Administer H.323 gatekeeper
- Administer 911inform user
- Administer security database
- Administer ports
- Restart service

6.1. Launch OAM Interface

Access the OAM web-based interface by using the URL "https://ip-address" in an Internet browser window, where "ip-address" is the IP address of the Application Enablement Services server.

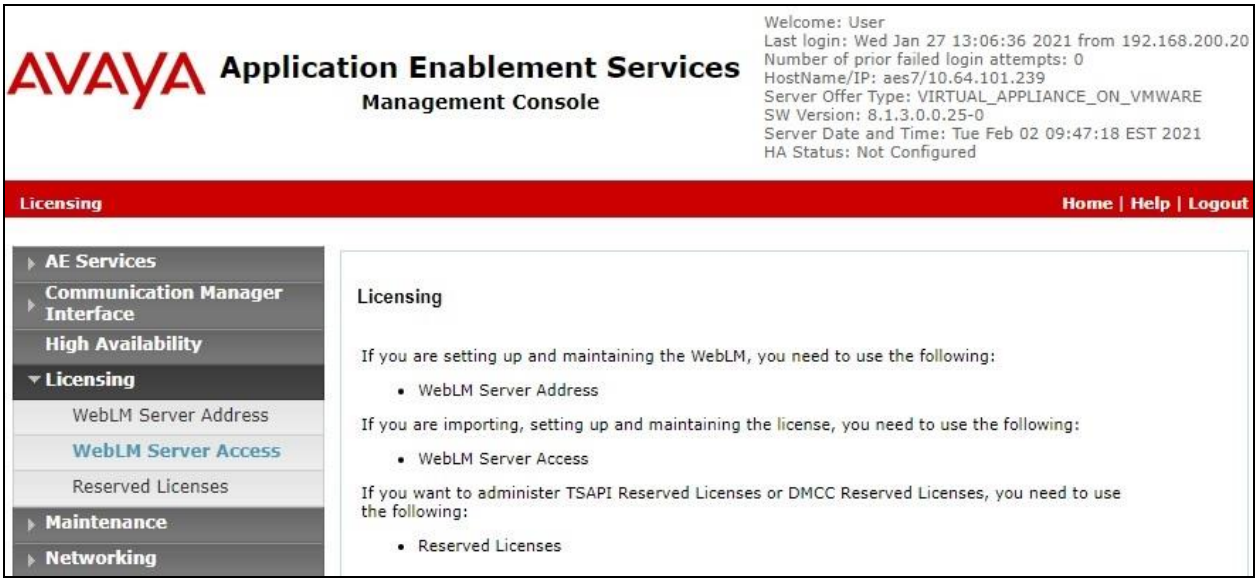
The **Please login here** screen is displayed. Log in using the appropriate credentials.

The **Welcome to OAM** screen is displayed next.



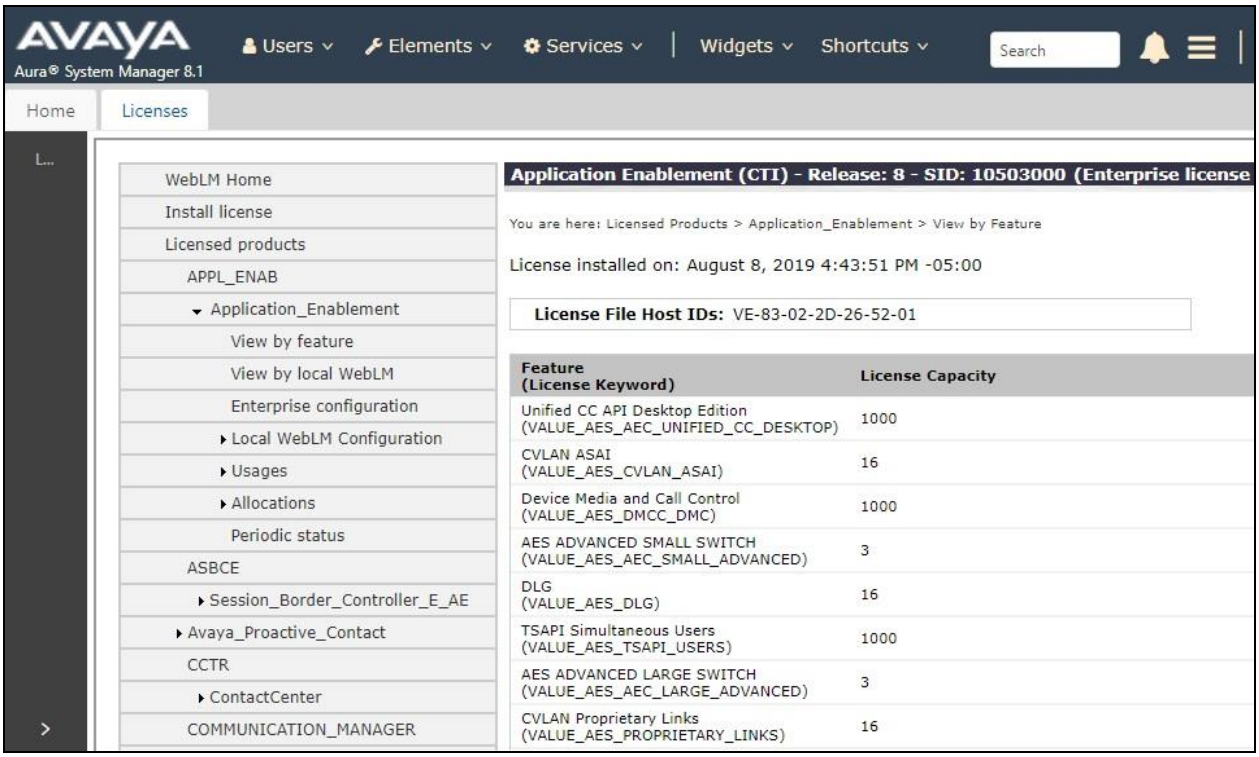
6.2. Verify License

Select **Licensing → WebLM Server Access** in the left pane, to display the applicable WebLM server login screen (not shown). Log in using the appropriate credentials and navigate to display installed licenses (not shown).



Select **Licensed products → APPL_ENAB → Application_Enablement** in the left pane, to display the **Application Enablement (CTI)** screen in the right pane.

Verify that there is sufficient license for **Device Media and Call Control** as shown below.

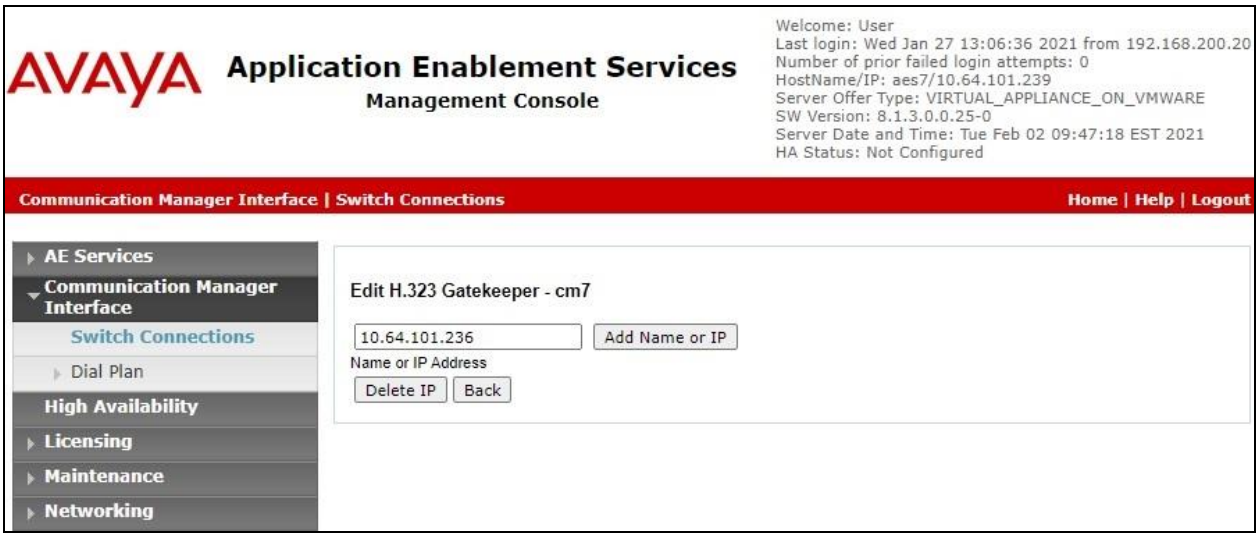


6.3. Administer H.323 Gatekeeper

Select **Communication Manager Interface → Switch Connections** from the left pane. The **Switch Connections** screen shows a listing of the existing switch connections.

Locate the connection name associated with the relevant Communication Manager, in this case "cm7", and select the corresponding radio button. Click **Edit H.323 Gatekeeper**.

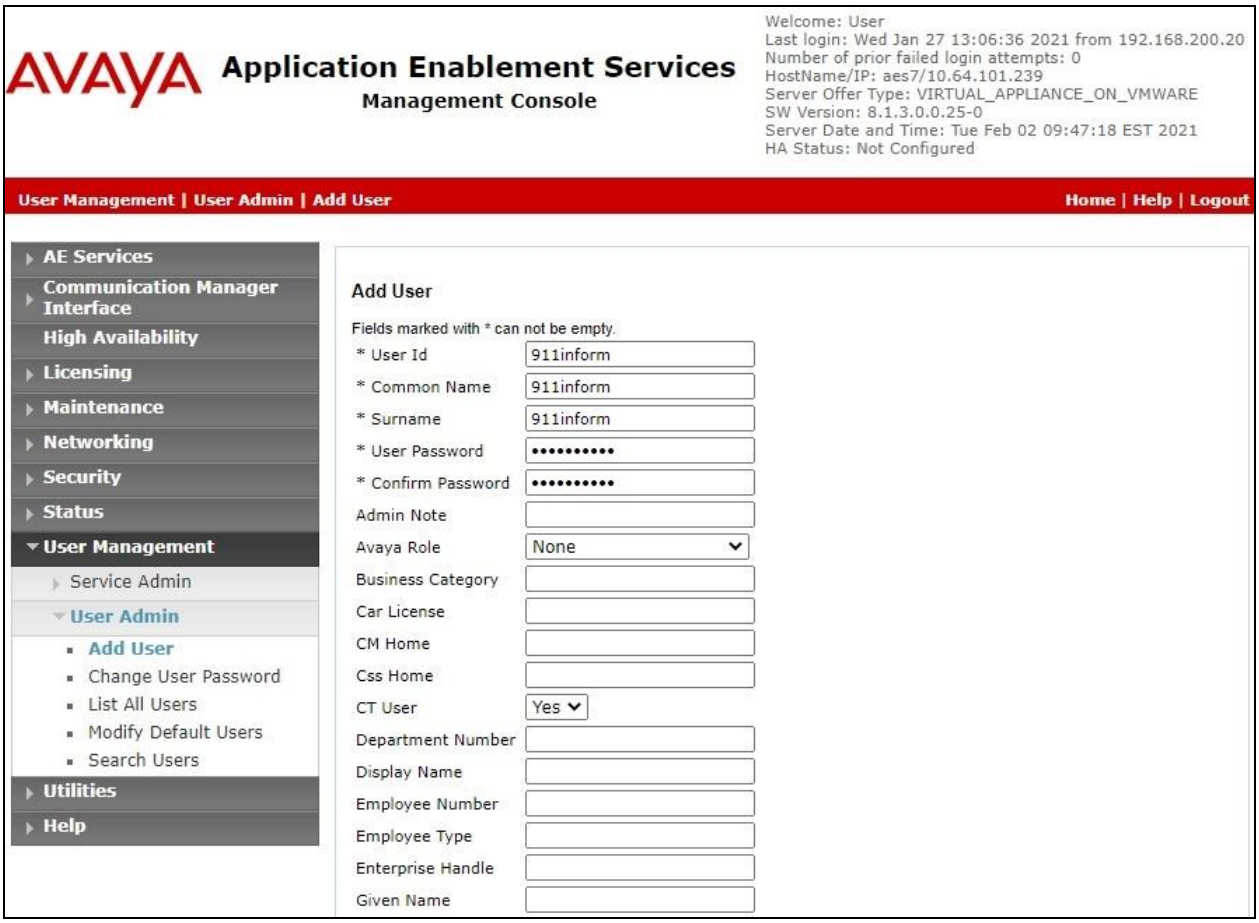
The **Edit H.323 Gatekeeper** screen is displayed next. Enter the IP address of a C-LAN circuit pack or the Processor C-LAN on Communication Manager to use as the H.323 gatekeeper, in this case "10.64.101.236" as shown below. Click **Add Name or IP**.



6.4. Administer 911inform User

Select **User Management → User Admin → Add User** from the left pane, to display the **Add User** screen in the right pane.

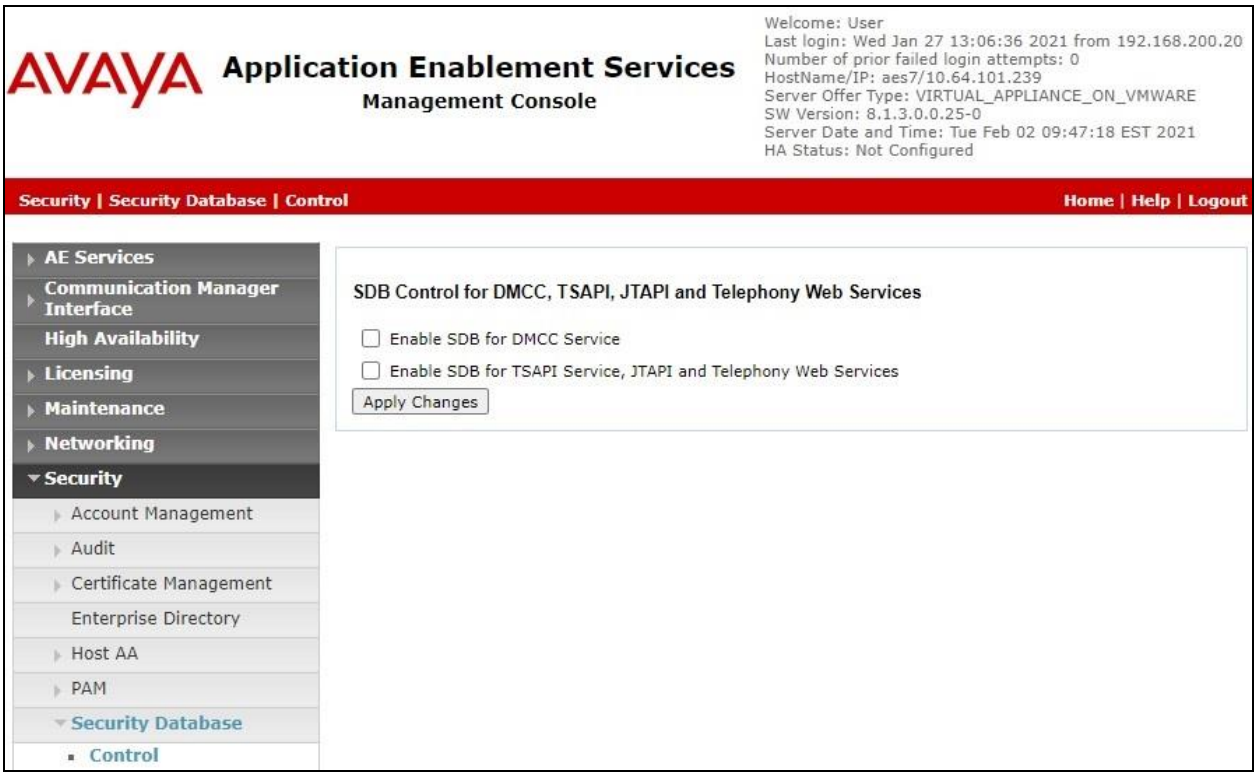
Enter desired values for **User Id**, **Common Name**, **Surname**, **User Password**, and **Confirm Password**. For **CT User**, select "Yes" from the drop-down list. Retain the default value in the remaining fields.



6.5. Administer Security Database

Select **Security → Security Database → Control** from the left pane, to display the **SDB Control for DMCC, TSAPI, JTAPI and Telephony Web Services** screen in the right pane. Make certain both parameters are unchecked, as shown below.

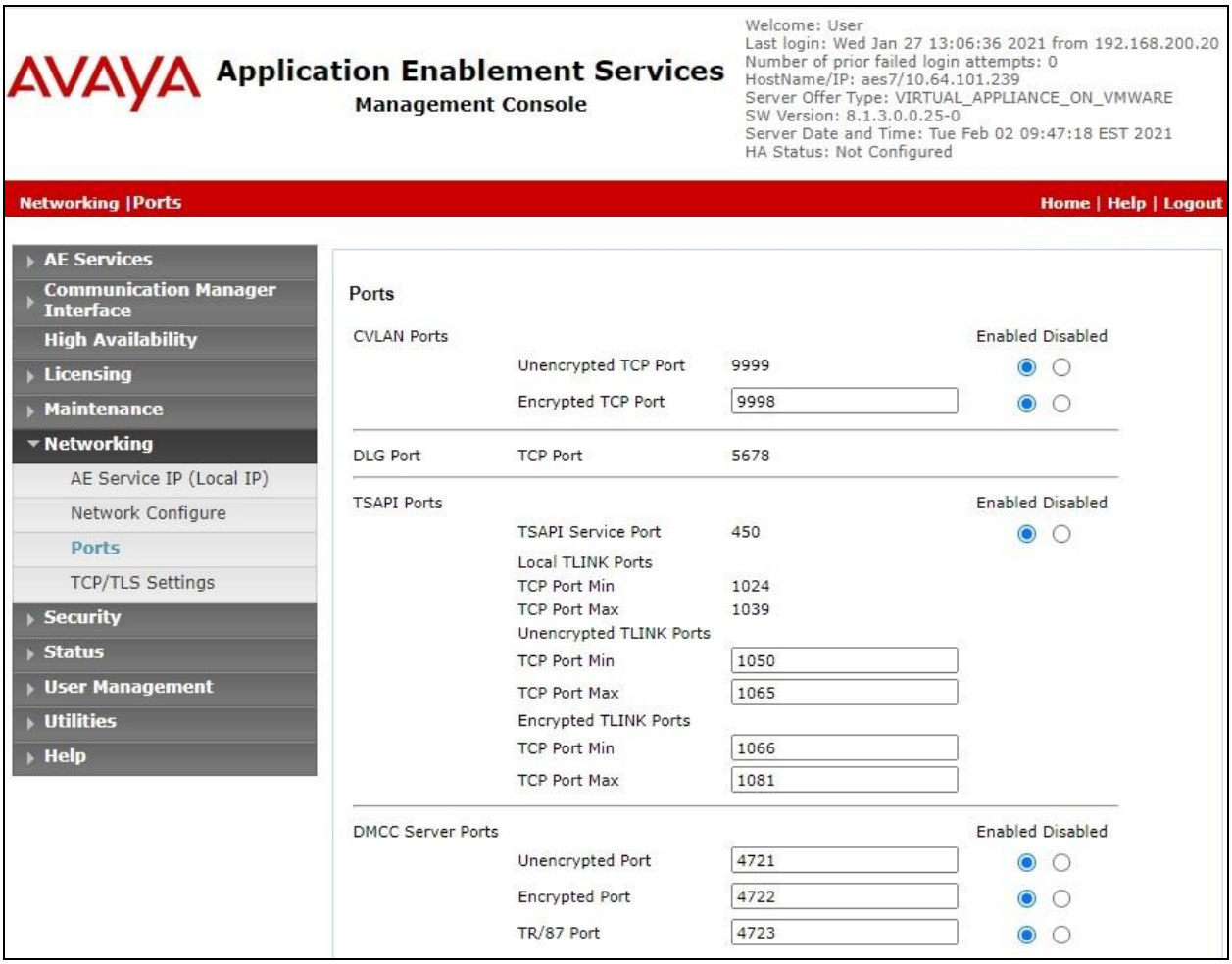
In the event that the security database is used by the customer with parameters already enabled, then follow reference **[2]** to configure access privileges for the 911inform user from **Section 6.4**.



6.6. Administer Ports

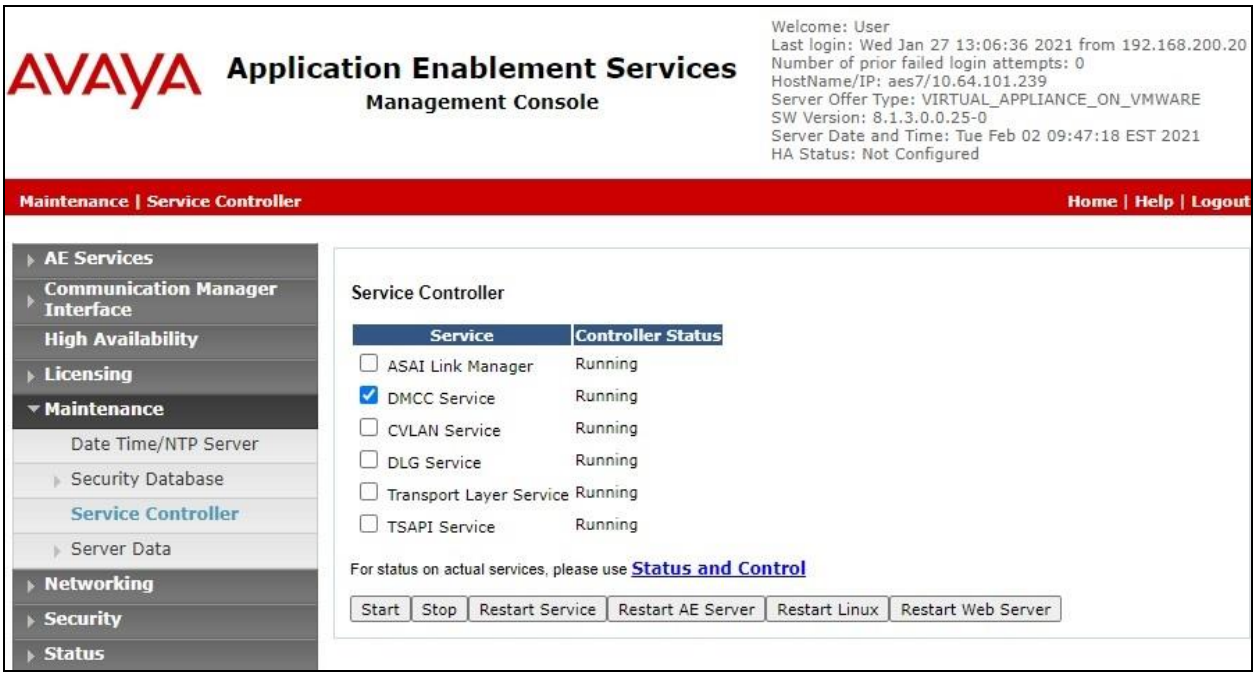
Select **Networking → Ports** from the left pane, to display the **Ports** screen in the right pane.

In the **DMCC Server Ports** section, select the radio button for **Unencrypted Port** under the **Enabled** column, as shown below. Retain the default values in the remaining fields.



6.7. Restart Service

Select **Maintenance → Service Controller** from the left pane, to display the **Service Controller** screen in the right pane. Check **DMCC Service** and click **Restart Service**.



7. Configure 911inform Connected Building

This section provides the procedures for configuring Connected Building. The procedures include the following areas:

- Administer config.properties
- Launch web interface
- Administer users
- Administer room extensions

The configuration of Connected Building is typically performed by the 911inform Project Management team. The procedural steps are presented in these Application Notes for informational purposes.

Prior to configuration, an administrator account along with organizational ID, building and room layouts are assumed to have been created.

7.1. Administer config.properties

Log in to the Linux shell of Connected Building. Navigate to the **~/DMCC-Crisis-Alert-Dist/resources** directory and open the **config.properties** file with a text editor such as **vim**.

```
[xxxx@ubuntu:~$
[xxxx@ubuntu:~$ cd ~/DMCC-Crisis-Alert-Dist/resources
[xxxx@ubuntu:~/DMCC-Crisis-Alert-Dist/resources$ sudo vim config.properties
```

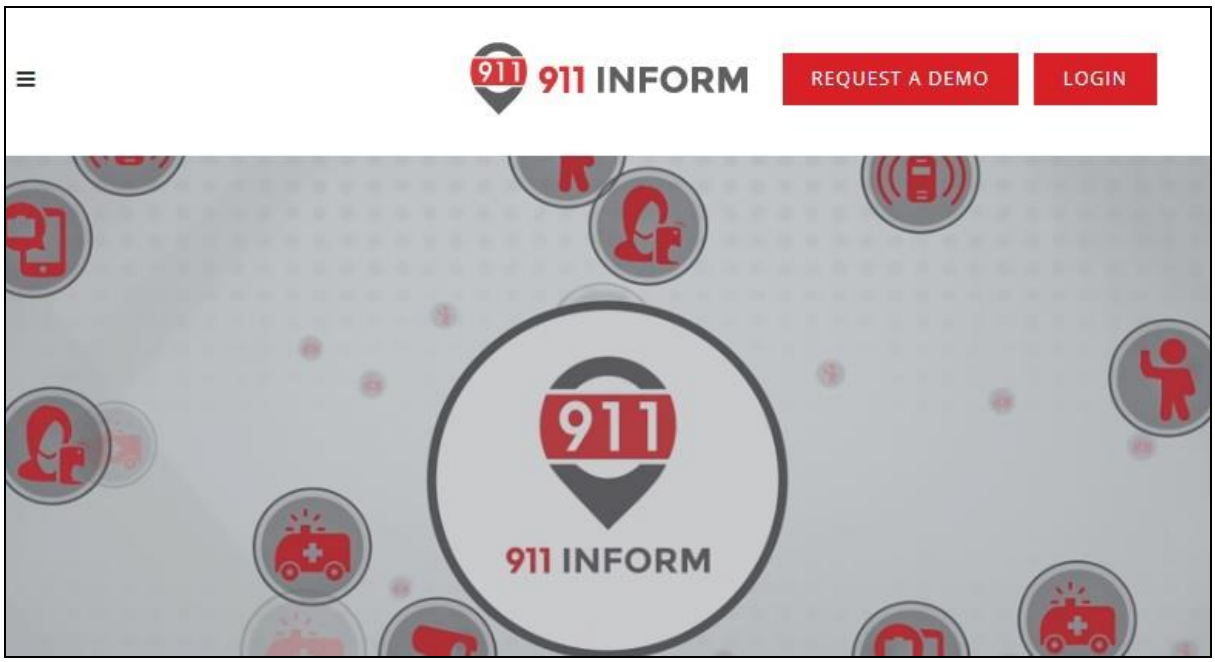
Enter the following values for the specified fields and retain the default values for the remaining fields.

- **aesIP:** IP address of Application Enablement Services.
- **cmIP:** IP address of the H.323 gatekeeper from **Section 6.3**.
- **username:** The 911inform user credentials from **Section 6.4**.
- **password:** The 911inform user credentials from **Section 6.4**.
- **apiKey:** The pertinent api key value provided by 911inform.
- **orgId:** The pertinent organizational ID value provided by 911inform.
- **source:** Unique location IP address if used with 911inform, else "255.255.255.255".
- **caExt:** The virtual IP softphone extension from **Section 5.1**.
- **caPass:** The virtual IP softphone security code from **Section 5.1**.

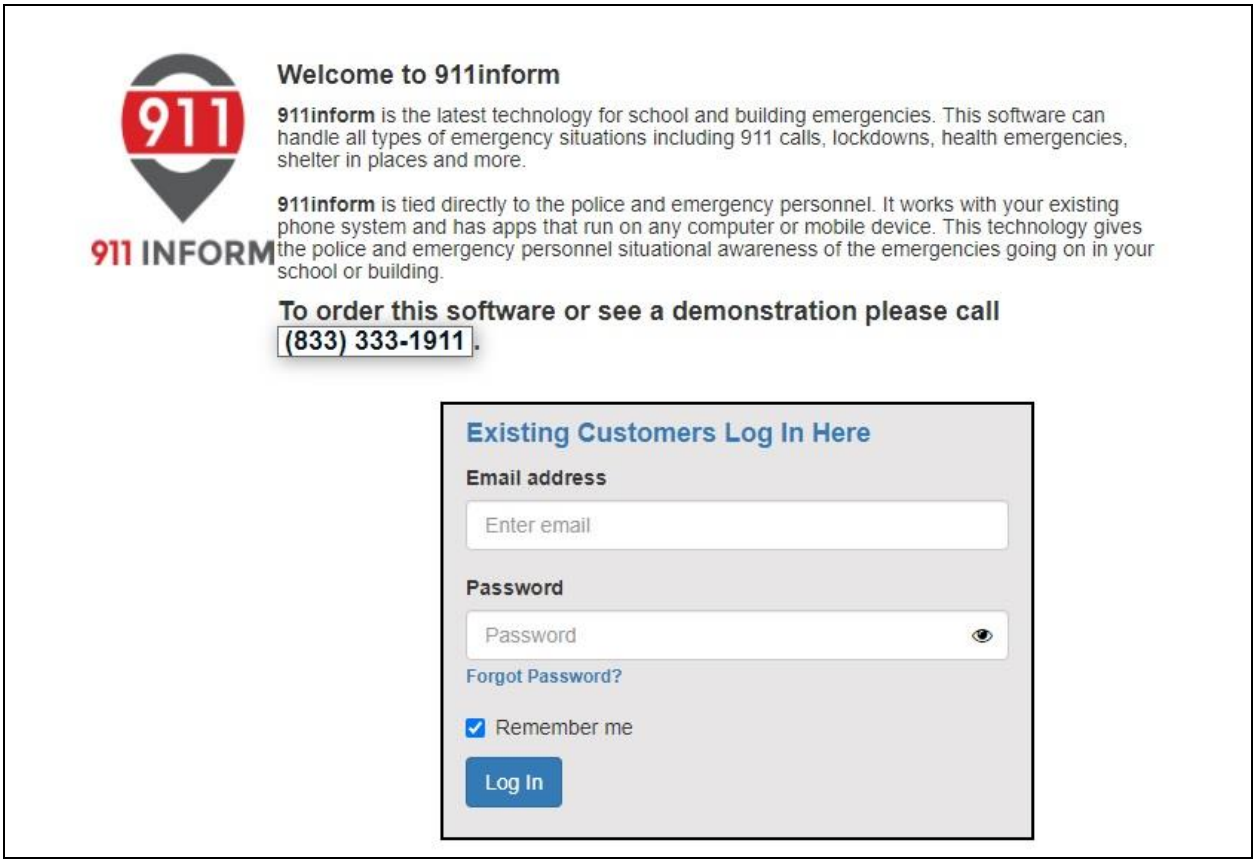
```
aesIP=10.64.101.239
aesPort=4721
cmIP=10.64.101.236
username=911inform
password=911Inform#
apiKey=xxxxx
orgId=yyyyy
source=255.255.255.255
caExt=65991
caPass=123456
```

7.2. Launch Web Interface

Access the Cloud Service web interface by using the URL **https://inform.911inform.com** in a browser window to display the screen below. Select **LOGIN**.



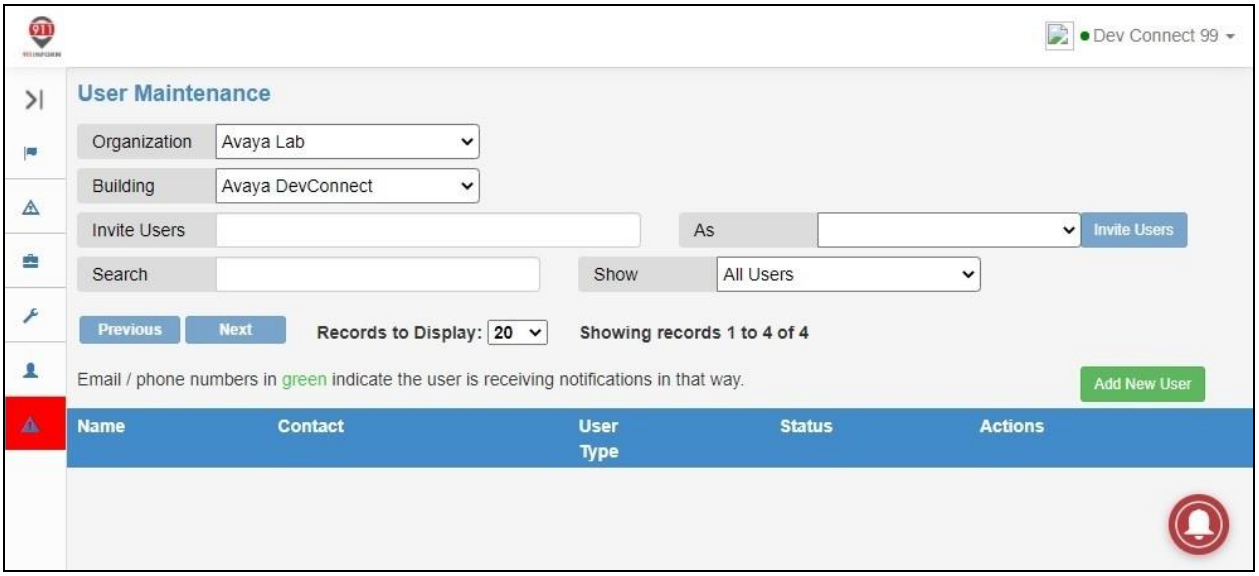
The **Welcome to 911inform** screen below is displayed. Enter the administrator credentials provided by 911inform, and click **Log In**.



7.3. Administer Users

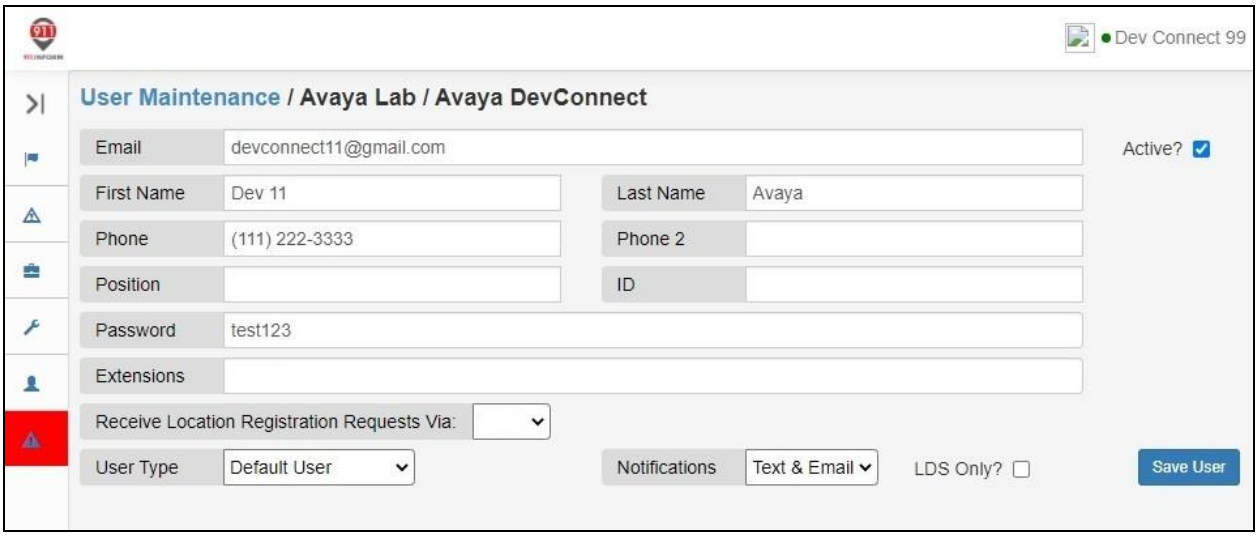
The screen below is displayed next. Select **Administration Menu → User Maintenance** to add users for emergency notifications.

The **User Maintenance** screen is displayed. Retain the default values and select **Add New User**.



The screen below is displayed next. Enter the following values for the specified fields and retain the default values for the remaining fields.

- **Email:** The user email address.
- **First Name:** The user first name.
- **Last Name:** The user last name.
- **Phone:** The user mobile number.
- **Password:** The desired password.
- **User Type:** "Default User"
- **Notifications:** Select the desired notifications, in this case "Text & Email".



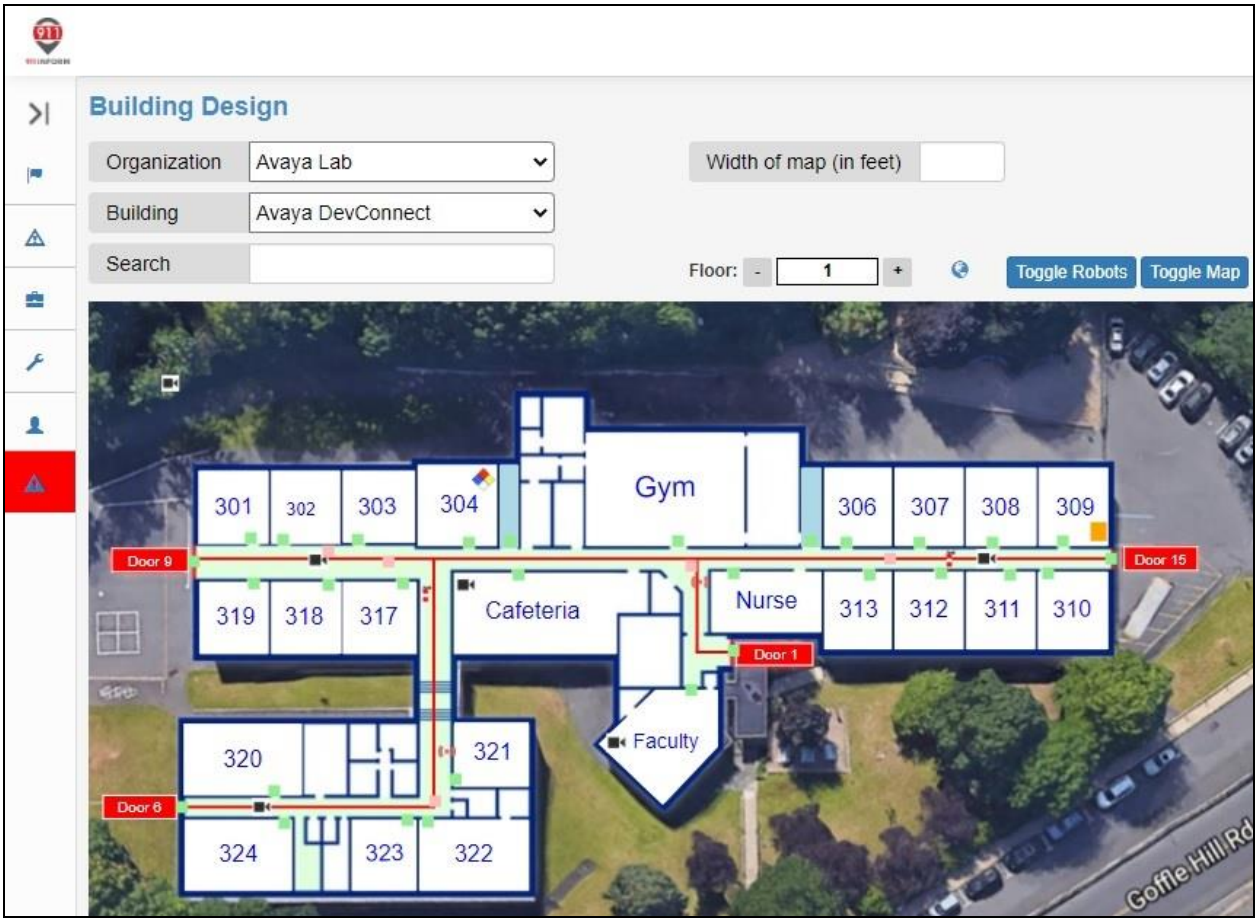
Repeat this section to create the desired number of users to receive notification of emergency calls. Below were the users created for the compliance testing with masked email and mobile numbers for security purposes.

7.4. Administer Room Extensions

From the expanded left pane shown in **Section 7.3**, select **Administration Menu → Building Design** to map user extensions to rooms.

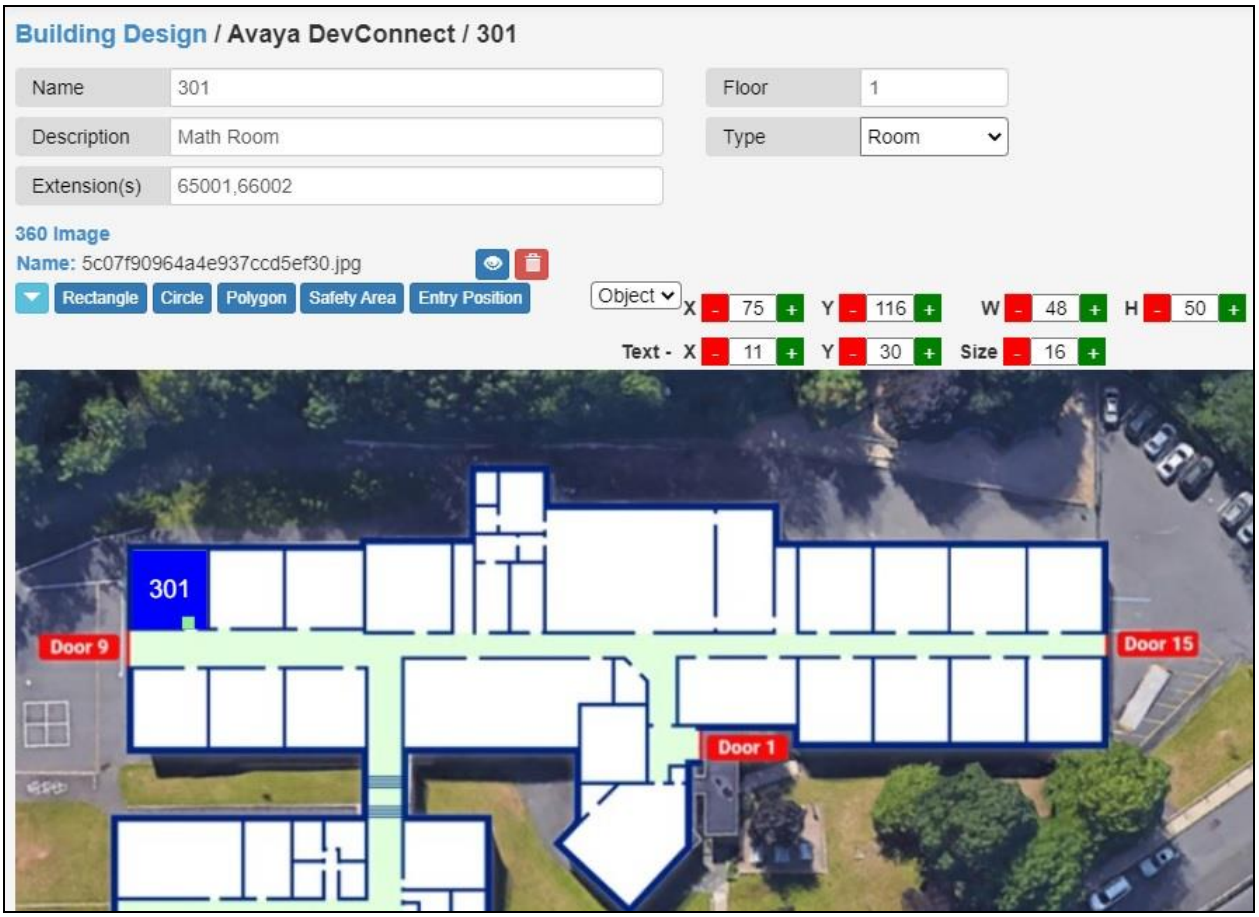
Note that user extensions to rooms mapping can be accomplishing by import of CSV file or by manual configuration. The compliance testing used the manual configuration method.

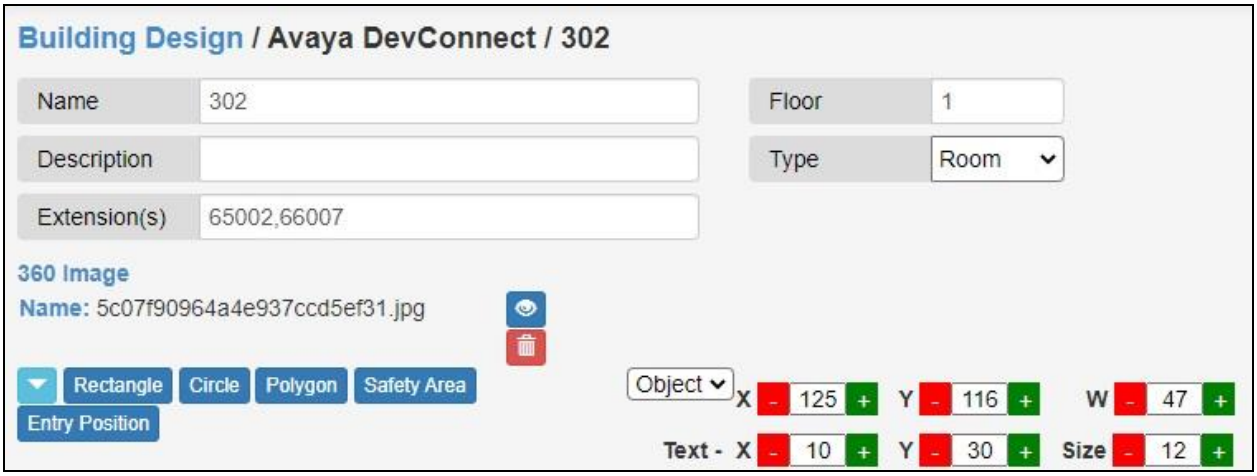
The **Building Design** screen is displayed. Select the first room from **Section 3** to map extensions to, in this case "301".



The **Building Design** screen is updated as shown below. For **Extension(s)**, enter the associated user extensions and/or extension ranges from **Section 3**, separated by commas.

Repeat this section to map all user extensions to rooms from **Section 3**. In the compliance testing, user extensions 65001 and 66002 were mapped to room 301, and user extensions 65002 and 66007 were mapped to room 302, as shown below.





8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Communication Manager, Application Enablement Services, and Connected Building.

8.1. Verify Avaya Aura® Communication Manager

On Communication Manager, verify registration status of virtual IP softphone by using the "list registered-ip-stations" command. Verify that the virtual IP softphone from **Section 5.1** is displayed along with IP address of the Application Enablement Services server, as shown below.

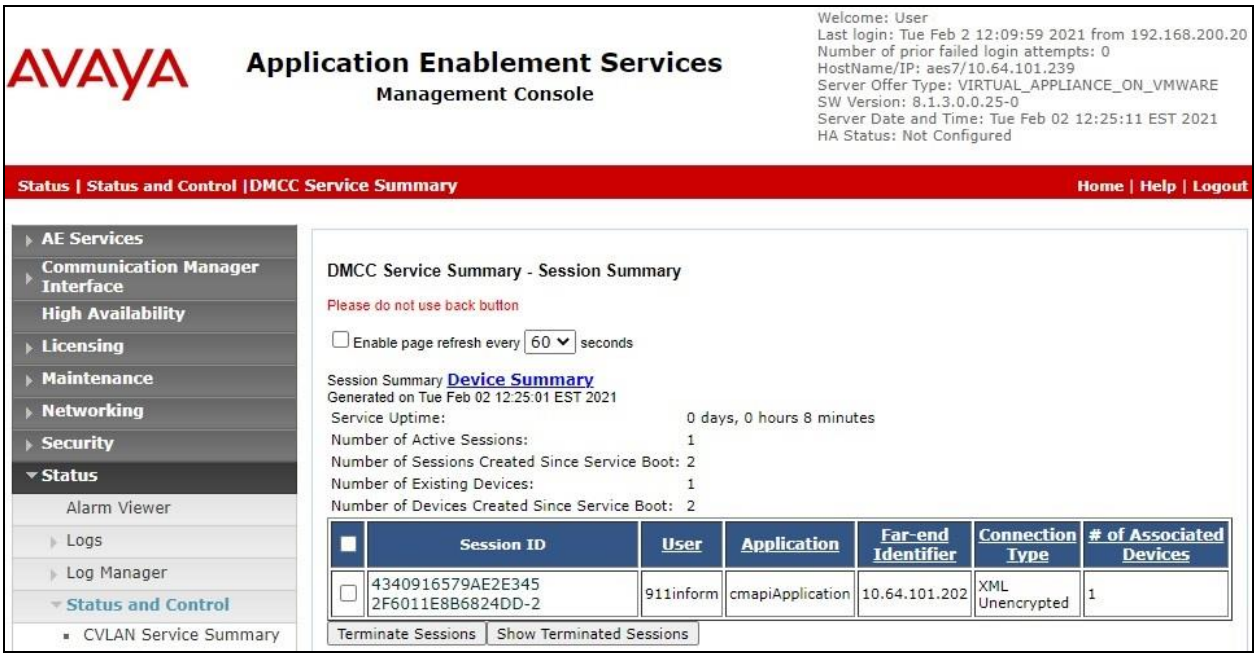
```
list registered-ip-stations

                            REGISTERED IP STATIONS

Station Ext       Set Type/ Prod ID/    Station IP Address/
or Orig Port      Net Rgn   Release     Gatekeeper IP Address
  Socket
65001             9611      IP_Phone    192.168.200.217
  tls             1         6.8502      10.64.101.236
65002             9611      IP_Phone    192.168.200.179
  tls             1         6.8502      10.64.101.236
65991             9630      IP_API_A    10.64.101.239
  tcp             1         3.2040      10.64.101.236
```

8.2. Verify Avaya Aura® Application Enablement Services

On Application Enablement Services, verify status of the DMCC connection by selecting **Status → Status and Control → DMCC Service Summary** (not shown below) from the left pane. The **DMCC Service Summary – Session Summary** screen is displayed. Verify that the **User** column shows an active session with the 911inform user from **Section 6.4**.

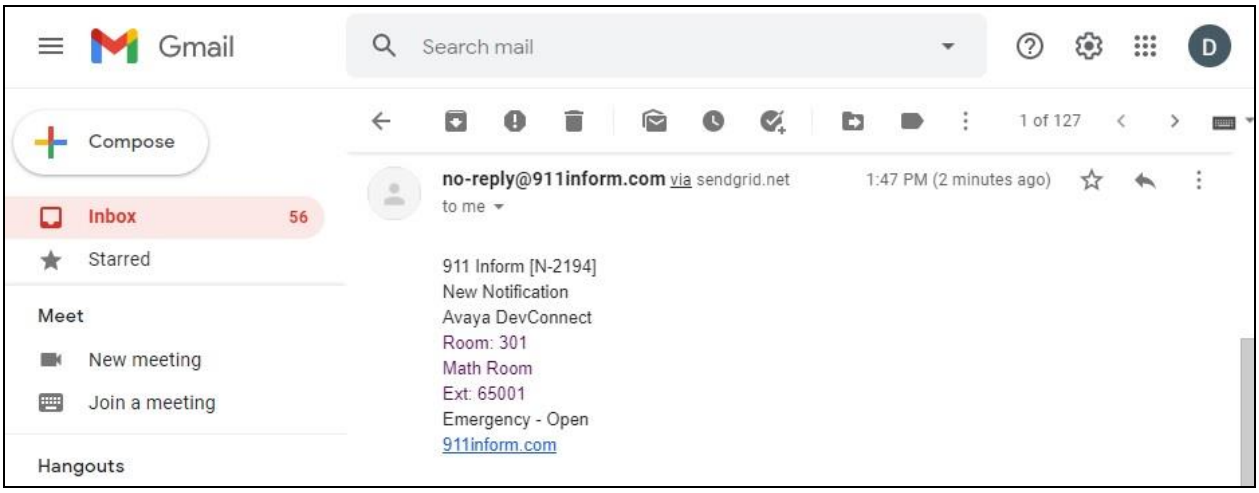


8.3. Verify 911inform Connected Building

Make an emergency call from a Communication Manager user from **Section 3**. Verify that all emergency notification users configured in **Section 7.3** receive proper email and/or SMS notifications, and that the users can log into the Cloud Service to review details.

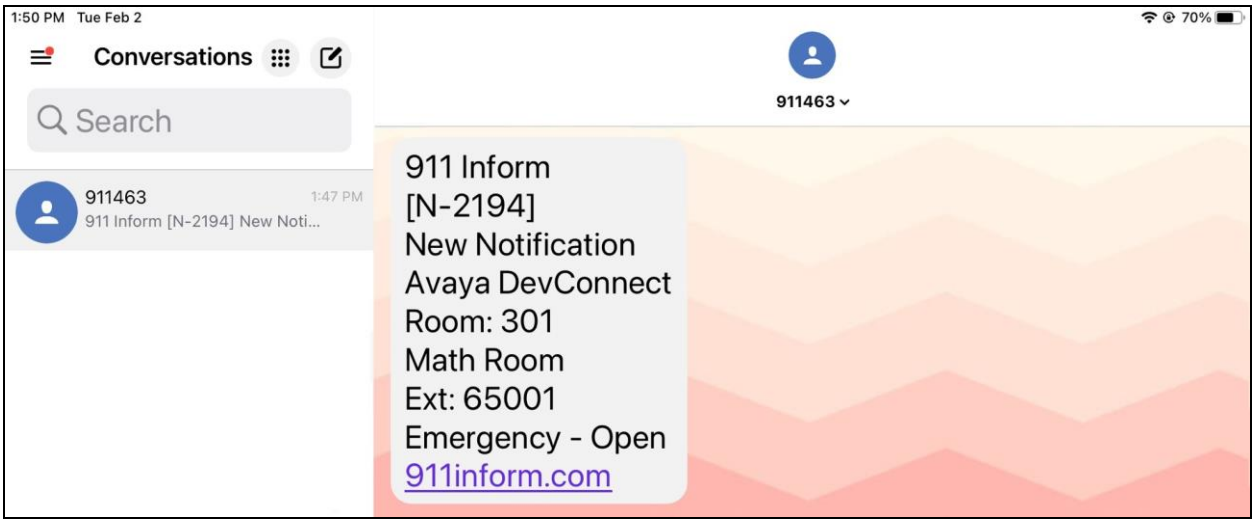
8.3.1. Verify Email Notification

Log a notification user into his/her email application. Verify that there is email notification for the emergency call as shown below, where "65001" is the extension of the emergency call originator obtained from DMCC and "301" is the room mapped to the user extension from **Section 7.4**.



8.3.2. Verify SMS Notification

Log a notification user into his/her SMS application or mobile phone. Verify that there is SMS notification with similar emergency call information from **Section 8.3.1** as shown below.



8.3.3. Verify Cloud Service

Click on the **911inform.com** link provided in the email notification from **Section 8.3.1** or the SMS notification from **Section 8.3.2** to open a browser connection to the Cloud Service web interface. The same 911inform screen from **Section 7.2** is displayed (not shown). Enter the notification user credentials to log in.

Verify that the active emergency is displayed, along with the emergency call originator extension "65001" and highlight of mapped room number from **Section 7.4**, as shown below.

9. Conclusion

These Application Notes describe the configuration steps required for 911inform Connected Building to successfully interoperate with Avaya Aura® Communication Manager 8.1.3 using Avaya Aura® Application Enablement Services 8.1.3. All feature and serviceability test cases were completed with observations noted in **Section 2.2**.

10. Additional References

This section references the product 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® Application Enablement Services*, Release 8.1.x, Issue 8, December 2020, available at http://support.avaya.com.

3. *Connected Building Solution CM Integration Guide*, available upon request to 911inform Support.

4. *911inform User Manual Administrator*, available upon request to 911inform Support.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.