Avaya Solution & Interoperability Test Lab

Application Notes for Phybridge UniPhyer with Avaya Aura® Communication Manager 6.3 and Avaya Aura® Session Manager 6.3 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Phybridge UniPhyer to interoperate with Avaya Aura® Communication Manager 6.3 and Avaya Aura® Session Manager 6.3. In the compliance testing, the Phybridge UniPhyer leveraged the existing single-pair telephony wiring to provide dedicated Ethernet voice path and Power over Ethernet to Avaya H.323 IP telephones registered to Avaya Aura® Communication Manager and Avaya SIP IP telephones registered to Avaya Aura® Session Manager.

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 a compliance-tested configuration consisting of Phybridge UniPhyer, Phybridge PhyAdapters, Avaya Aura® Communication Manager, Avaya Aura® System Manager, Avaya Aura® Session Manager, Avaya H.323 and Avaya SIP IP telephones.

The Phybridge UniPhyer is a LAN appliance that leverages the existing single-pair telephony wiring to provide dedicated Ethernet and Power over Ethernet (PoE) to Avaya H.323 and SIP IP telephones.

2. General Test Approach and Test Results

The compliance testing focused on the interoperability between Phybridge UniPhyer and Avaya IP telephones to ensure that the phones work as expected. Serviceability testing was also performed.

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.

2.1. Interoperability Compliance Testing

Testing consisted of typical call scenarios involving Avaya endpoints connected to UniPhyer. External call scenarios were also tested with a PRI PSTN connection. All tests were performed manually and the focus was on verifying interoperability compliance.

Feature testing included: registration, audio codec, media shuffling, basic calls, hold/reconnect, conference, transfer, display, DTMF, and message waiting indicator (MWI) scenarios.

The serviceability testing focused on verifying the ability of Phybridge UniPhyer to recover from adverse conditions, such as disconnecting and reconnecting the Ethernet cables to the Phybridge UniPhyer and to the Avaya IP telephones. Reboots and power cycling of Phybridge UniPhyer were also tested.

2.2. Test Results

All applicable test cases were executed and passed with the following observations:

The Avaya B179 Conference Phone was powered with its local power supply and connected to the PhyAdapter with an Ethernet cable as per **Reference 5** in **Section 10**. This configuration was used because the B179 phone required more PoE power than could be supplied by UniPhyer. Other Class 3 endpoints may also require this configuration. UniPhyer Switches can power Class 1, Class 2 and some Class 3 IEEE 802.3af compliant IP devices.

The Phybridge PhyAdapters will reset if they receive Jumbo Ethernet Frames and it was found that Avaya one-X® Deskphone H.323 3.2.1 software would generate Jumbo Ethernet Frames in some situations causing loss of network connectivity. The latest version of Avaya one-X® Deskphone H.323 3.2.2 software fixes this issue.

2.3. Support

Technical support on the Phybridge UniPhyer can be obtained through the following:

- **Phone:** (888) 901-3633
- **Email:** Support@Phybridge.com

3. Reference Configuration

In the test configuration shown in **Figure 1**, Avaya IP telephones are connected to the network via the Phybridge UniPhyer leveraging the existing CAT3 cabling that was previously used for Analog and Digital phones. For each station user, one end of the CAT3 cable is changed to connect to the Phybridge UniPhyer instead of the Analog or Digital Line circuit pack on the Avaya G650. The other end of the CAT3 cable connects to a Phybridge PhyAdapter with an RJ11 connector. Each PhyAdapter is connected using a standard CAT5 Ethernet cable to an Avaya IP telephone.

In the sample configuration Avaya H.323 IP telephones register to Communication Manager and Avaya SIP IP telephones register to Session Manager.

The Phybridge UniPhyer provides power to the Avaya IP telephones, and is transparent to the telephones in terms of the telephones' network settings.

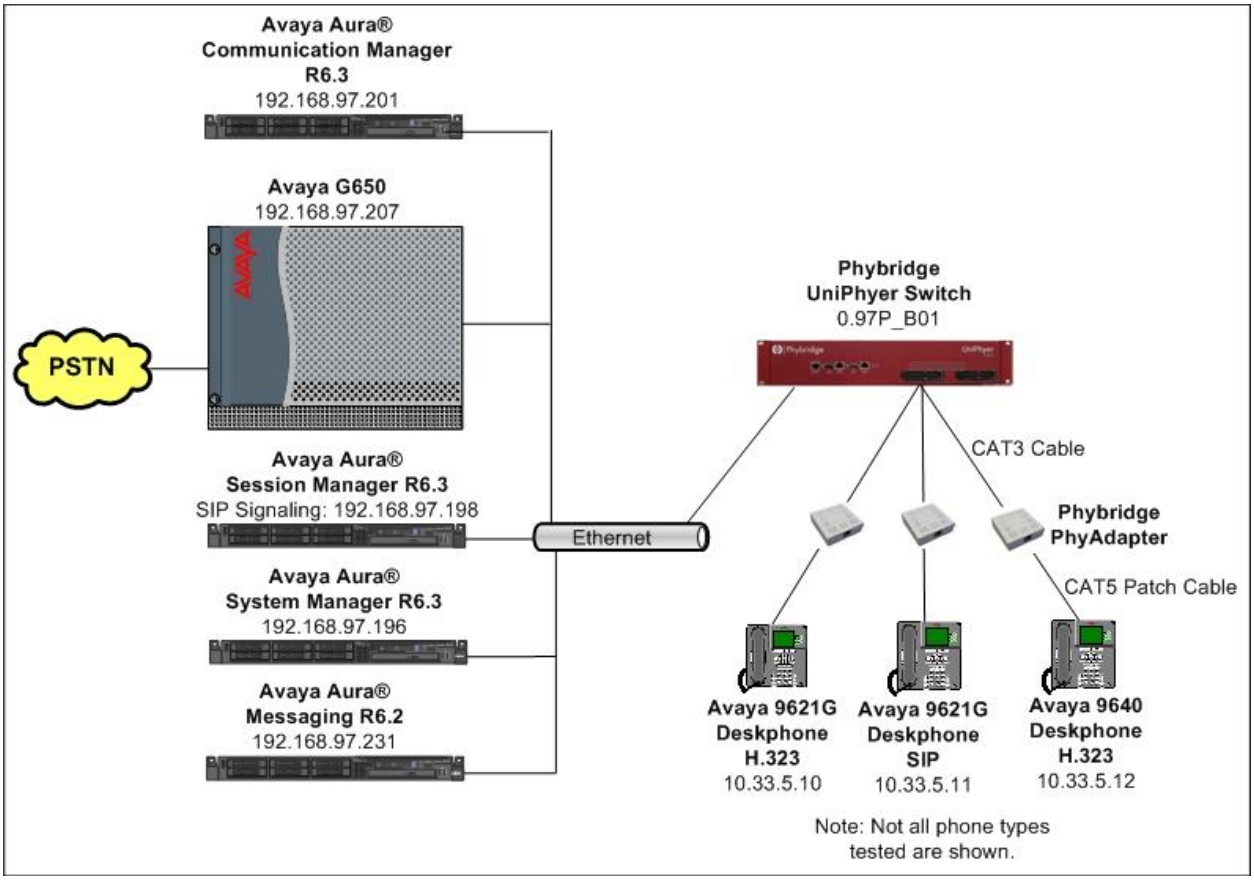


Figure 1: Phybridge UniPhyer with Avaya Aura® Communication Manager and Avaya Aura® Session Manager

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Session Manager running on S8800 Server	Release: 6.3.2.0.632023
Avaya Aura® System Manager running on S8800 Server	6.3.0 - FP2 Build No. - 6.3.0.8.5682-6.3.8.1627
Avaya Aura® Communication Manager running on Avaya S8800Server/G650 Media Gateway	R016x.03.0.124.0 patch 21172
Avaya Aura® Messaging	6.2
Avaya 1140E Deskphone (SIP)	04.04.10.00
1608 IP Deskphone (H.323)	1.3.4
Avaya 9621G IP Deskphone (H.323)	6.3.1.16
Avaya 9621G IP Deskphone (SIP)	6.3.0.73
Avaya 9640 IP Deskphone (H.323)	3.2.1
Avaya 9620L IP Deskphone (SIP)	2.6.11.4
Avaya B179 Conference Phone (SIP)	2.3.8
Phybridge PhyAdapters	LB-PA111
Phybridge UniPhyer Switch LB-UA2324	0.97P_B01

5. Configure Avaya H.323 Phones on Avaya Aura® Communication Manager

No special configuration is required for Avaya H.323 phones to interoperate with UniPhyer. For completeness, this section provides the procedures for configuring Avaya H.323 phones on Communication Manager. It is assumed that Communication Manager and Session Manager have already been installed and are functioning.

In a typical installation of Phybridge UniPhyer, analog and digital telephones using existing CAT3 cabling would be replaced with new IP telephones as described in **Section 3**. This section shows an example of modifying an existing station type to match the new Avaya H.323 IP telephone, and allows the user to retain the same extension number.

Change the station type of an existing analog or digital station by using the command **change station n**, where "n" is the existing extension number. For **Type**, enter the applicable IP station type, in this case "9640", and the **Port** field will be populated automatically. Enter a desired **Security Code**.

```
change station 53044                                      Page   1 of   5
                                    STATION

Extension: 53044                        Lock Messages? n               BCC: 0
     Type: 9640                         Security Code: 53044            TN: 1
     Port: IP                         Coverage Path 1:                 COR: 1
     Name: 9640                       Coverage Path 2:                 COS: 1
                                      Hunt-to Station:                Tests? y
STATION OPTIONS
                                           Time of Day Lock Table:
             Loss Group: 19          Personalized Ringing Pattern: 1
                                               Message Lamp Ext: 53044
           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? n

                                                     IP Video? n
                              Short/Prefixed Registration Allowed: default

                                           Customizable Labels? y
```

Repeat this section to modify the station type for all applicable analog and digital stations that are being replaced with H.323 Stations.

Use the **save translation** command to save these changes.

6. Configure Avaya SIP Phones

No special configuration is required for Avaya SIP phones to interoperate with UniPhyer. For completeness, this section provides information for configuring Avaya SIP phones with Session Manager and Communication Manager. It is assumed that Communication Manager and Session Manager have already been installed and are functioning. It is also assumed that dial plan routing has been configured on Session Manager and Communication Manager.

In a typical installation of Phybridge UniPhyer, analog and digital telephones using existing CAT3 cabling would be replaced with new IP telephones as described in **Section 3**. This section shows an example of modifying an existing station type to match the new Avaya SIP IP telephone, and allows the user to retain the same extension number.

6.1. SIP Phone Configuration on Avaya Aura® Communication Manager

This section provides the procedures for modifying a current station on Communication Manager to be a SIP station. The procedures fall into the following areas:

- Change Station Configuration
- Verify Off-PBX-Telephone Station-Mapping

6.1.1. Change Station Configuration

Change the station type of an existing analog or digital station by using the command **change station n**, where "n" is the existing extension number. For **Type**, enter the applicable IP station type, in this case "9621SIP", and the **Port** field will be populated automatically. Enter a desired **Security Code**.

```
change station 53045                                        Page   1 of   6
                                    STATION

Extension: 53045                       Lock Messages? n               BCC: 0
     Type: 9621SIP                     Security Code: 53045            TN: 1
     Port: IP                        Coverage Path 1:                 COR: 1
     Name: 53045                     Coverage Path 2:                 COS: 1
                                     Hunt-to Station:
STATION OPTIONS
                                         Time of Day Lock Table:
             Loss Group: 19
                                               Message Lamp Ext: 53045

        Display Language: english

          Survivable COR: internal
   Survivable Trunk Dest? y                          IP SoftPhone? n

                                                        IP Video? n
```

Navigate to **Page 4**. Add the desired number of **call-appr** entries in the **BUTTON ASSIGNMENTS** section. This governs how many concurrent calls can be supported. In the sample configuration, three call appearances were configured to support transfer and conferencing scenarios.

```
change station 53045                                          Page   4 of   6
                                    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:
 2: call-appr                          6:
 3: call-appr                          7:
 4:                                    8:
```

Navigate to **Page 6**. Enter **aar** for the **SIP Trunk** setting and use defaults for remaining fields.

```
change station 53045                                          Page   6 of   6
                                    STATION
SIP FEATURE OPTIONS

         Type of 3PCC Enabled: None
                    SIP Trunk: aar
```

6.1.2. Verify Off-PBX-Telephone Station-Mapping

Use the **change off-pbx-telephone station-mapping x** command where "x" is an extension assigned to a SIP Deskphone to verify an Off-PBX station mapping was automatically created for the SIP station.

On **Page 1**, verify the following fields were correctly populated.
- **Application**: Verify "**OPS**" is assigned.
- **Trunk Selection**: Verify "**aar**" is assigned.

```
change off-pbx-telephone station-mapping 53045                  Page   1 of   3
                  STATIONS WITH OFF-PBX TELEPHONE INTEGRATION

 Station       Application Dial   CC  Phone Number    Trunk       Config  Dual
 Extension                 Prefix                    Selection   Set     Mode
 53045           OPS           -     53045            aar        1
```

On **Page 2**, verify the following fields were correctly populated.
- **Mapping Mode**: Verify "**both**" is assigned.
- **Calls Allowed**: Verify "**all**" is assigned.

```
change off-pbx-telephone station-mapping 53045                  Page   2 of   3
                  STATIONS WITH OFF-PBX TELEPHONE INTEGRATION

 Station       Appl    Call        Mapping    Calls       Bridged       Location
 Extension     Name    Limit       Mode       Allowed     Calls
 53045         OPS      4         both         all         none
```

Use the **save translation** command to save these changes.

6.2. SIP Phone Configuration on Avaya Aura® Session Manager

This section describes the procedure to configure a SIP IP phone on Session Manager. It is assumed that Application and Application Sequence have already been configured.

The procedures fall into the following areas:

- Add SIP User
- Synchronize Changes with Communication Manager

Access the browser-based GUI of System Manager, using the URL **http://<FQDN >/SMGR**, where "<FQDN>" is the fully qualified domain name of System Manager. Log in to System Manager with the appropriate credentials (not shown).

6.2.1. Add SIP User

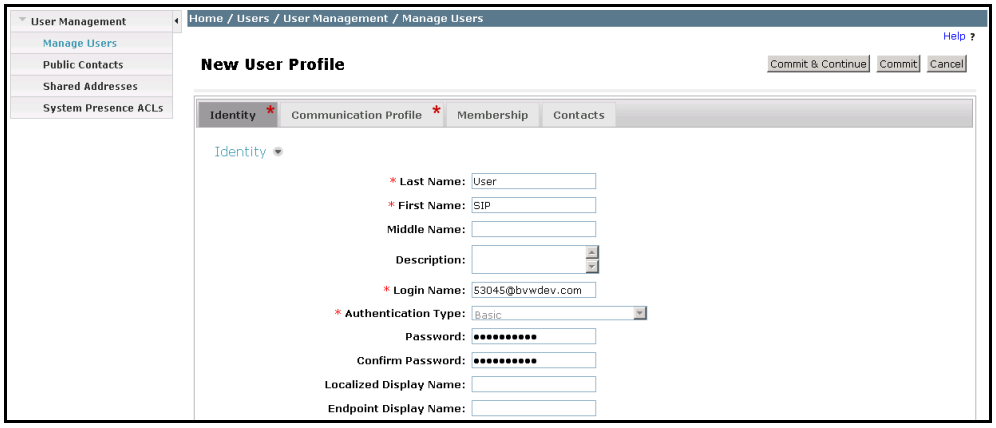
Add a new SIP user for the SIP station defined in **Section 6.1**.

On the System Manager home screen under the **Users** column select **User Management** (not shown). Select **Manage Users** from the left navigation menu.

Step 1: Click **New** (not shown). Enter values for the following required attributes for a new SIP user in the **Identity** section and use default values for the remaining fields.

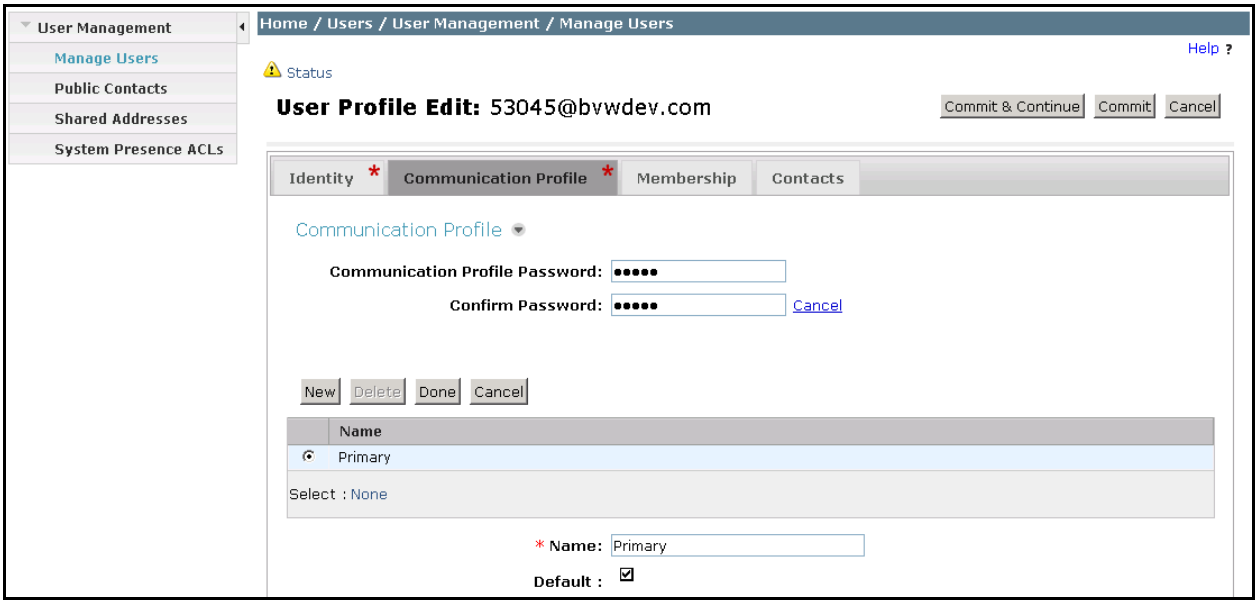
- **Last Name**: Enter last name of user.
- **First Name**: Enter first name of user.
- **Login Name**: Enter "**extension number@<domain>**" where "**<domain>**" matches the domain being used. In this example bvwdev.com was used.
- **Authentication Type**: Verify "**Basic"** is selected.
- **Password**: Enter password used to log into System Manager.
- **Confirm Password**: Repeat value entered above.
- **Localized Display Name**: Enter display name for user [Optional].

The screen below shows results from **Step 1** for a new SIP user.



Click **Commit & Continue** to save changes from **Step 1**.
Step 2: The **Communication Profile** tab should now be displayed. Click on **Edit** beside the **Communication Profile Password** text box (not shown). Enter the value the endpoint will use to register to Session Manager in the **Communication Profile Password** and **Confirm Password** fields. The **Communication Profile Password** should match the **Security Code** field defined in **Section 6.1.1**.

Verify there is a default entry identified as the Primary profile as shown below:



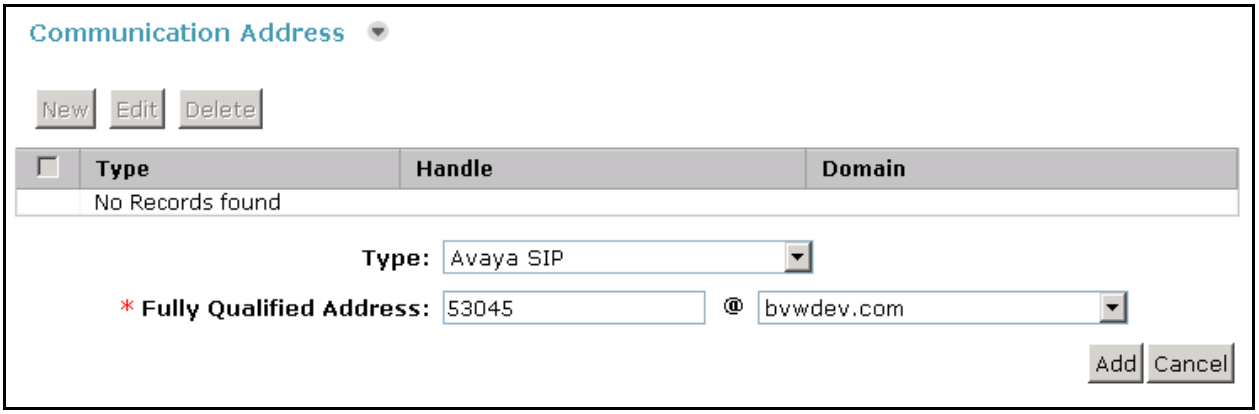
If an entry does not exist, select **New** and enter values for the following required attributes:
• **Name**: Enter "**Primary**".
• **Default**: Verify that the check box is selected.

Step 3: Expand **Communication Address** sub-section and select **New** to define a **Communication Address** for the new user.

Enter values for the following required attributes:

- **Type**: Select "**Avaya SIP**" from drop-down menu.
- **Fully Qualified Address**: Enter the same extension number as used for **Login Name** in **Step 1** in the textbox.
- **Domain**: Select the value that matches the domain name defined in **Step 1**.

Click **Add** to save the Communication Address.

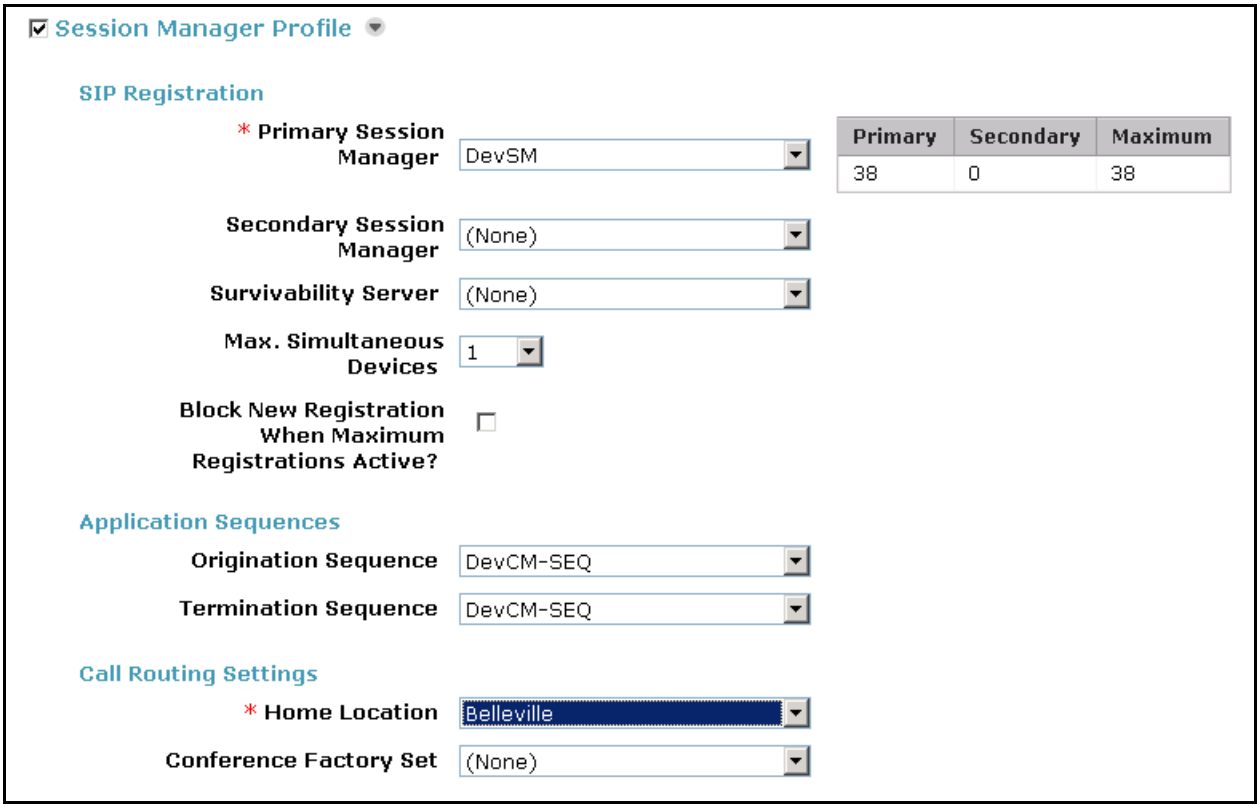


Step 4: Scroll down to the **Session Manager Profile** section and select the check box.

Enter the following values.

- **Primary Session Manager**: Select the appropriate Session Manager. In this example **DevSM** was used.
- **Origination Application Sequence**: Select an **Application Sequence**.
- **Termination Application Sequence**: Select an **Application Sequence**.
- **Conference Factory Set**: Retain the default value of "**(None)**".
- **Survivability Server**: Select "**(None)**" from drop-down menu.
- **Home Location**: Select Location.

The remaining values were left at default for this sample configuration. The screen below shows results from **Step 4**.

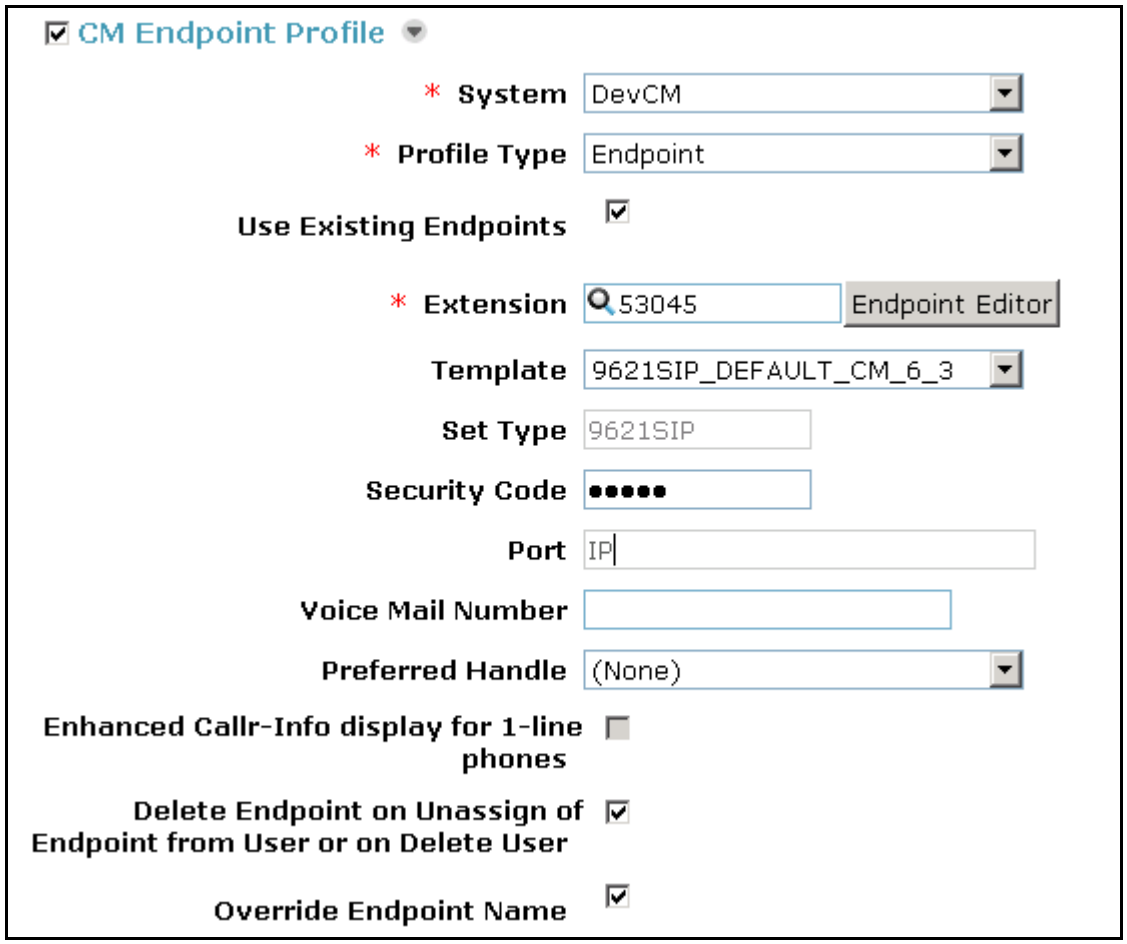


Step 5: Scroll down to the **CM Endpoint Profile** section and select the check box.

Enter the following values and use defaults for remaining fields.

- **System**: Select Managed Element defined for Communication Manager.
- **Profile Type**: Select "**Endpoint**".
- **Use Existing Endpoints**: Select the check box to use the existing extension.
- **Extension**: Enter same extension number used for Login Name in **Step 1**.
- **Template**: Select template for type of SIP phone.
- **Security Code**: Enter numeric value used to register the SIP endpoint. **Note**: this field should match the value entered for the Communication Profile Password field in **Step 2**.
- **Voice Mail Number**: Enter Pilot Number for Avaya Modular Messaging or Avaya Aura® Messaging if installed. Else, leave field blank.

The screen below shows the results from **Step 5** when adding a new SIP user in this sample configuration.

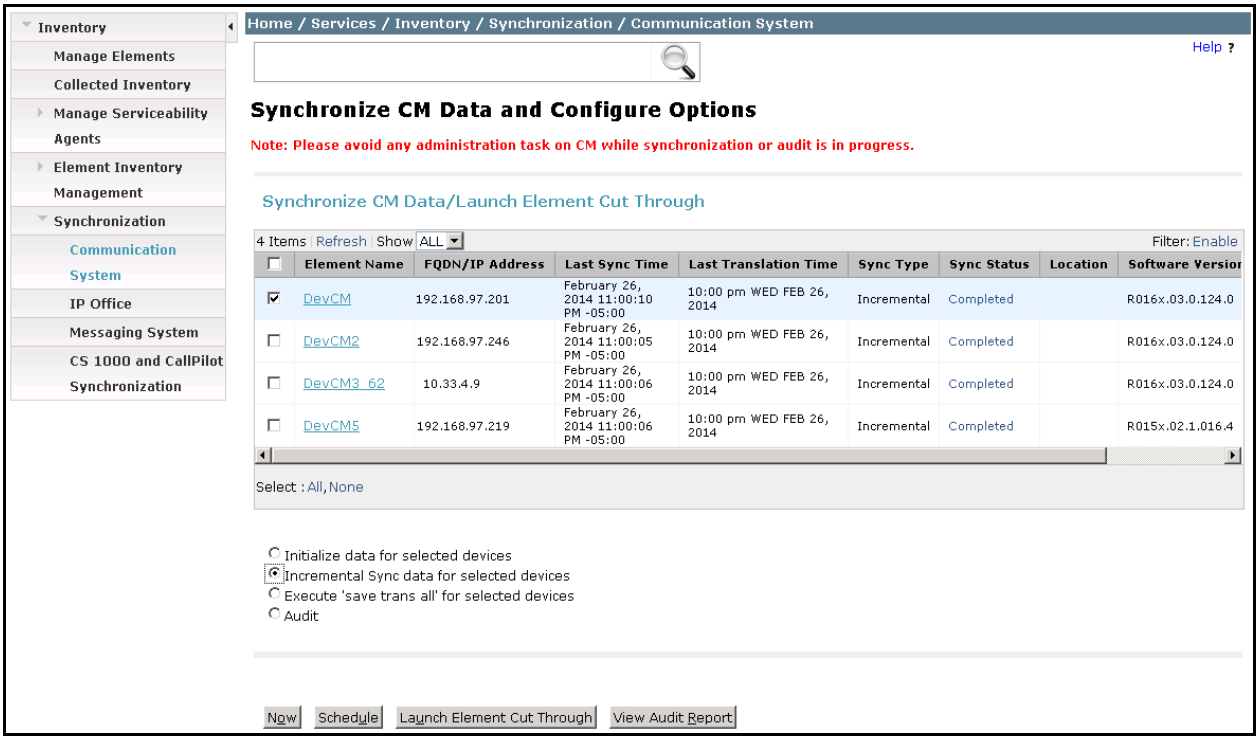


Click **Commit** (not shown) to save the definition of the new user.

6.2.2. Synchronize Changes with Avaya Aura® Communication Manager

After completing these changes in System Manager, perform an on demand synchronization. From the System Manager Home page navigate to **Services → Inventory → Synchronization → Communication System**.

On the **Synchronize CM Data and Configure Options** page, select the row associated with Communication Manager as shown below.



Select the **Incremental Sync data for selected devices** option and click **Now** to start the synchronization.

Use the **Refresh** button in the table header to verify status of the synchronization. Verify synchronization successfully completes by verifying the status in the **Sync Status** column shows "**Completed**".

Note: Depending on the number of administration changes made, synchronization might take several minutes to complete.

6.3. Avaya 9600 Series Deskphone (SIP) Configuration

This section describes the procedure to configure an Avaya 9600 Series Deskphone (SIP) so that it does not use Jumbo Ethernet Frames. This is required because the PhyAdapters will reset if they receive Jumbo Ethernet Frames causing the phone to lose network connectivity.

The **46xxsettings.txt** file can be used to configure 9600 Series SIP Deskphones to not use Jumbo Frames. In this sample configuration the setting **SET MTU_SIZE 1496** was used in the 46xxsettings.txt file to disable the use of Jumbo Frames.

The following is a section of the **46xxsettings.txt** file that is available for download at http://support.avaya.com.

```
## MTU_SIZE specifies the maximum transmission unit (MTU) size transmitted by the
phone.
##  Valid values are 1496 or 1500.
##  Use 1496 for older Ethernet switches.
SET MTU_SIZE 1496
##
```

Detailed information on using the 46xxsettings.txt file can be found in **Reference 3** in **Section 10**.

7. Configure Phybridge UniPhyer

This section provides the procedures for configuring UniPhyer. The procedures fall into the following areas:

- Launch web interface
- Administer Phybridge UniPhyer IP Address
- Save Running Configuration

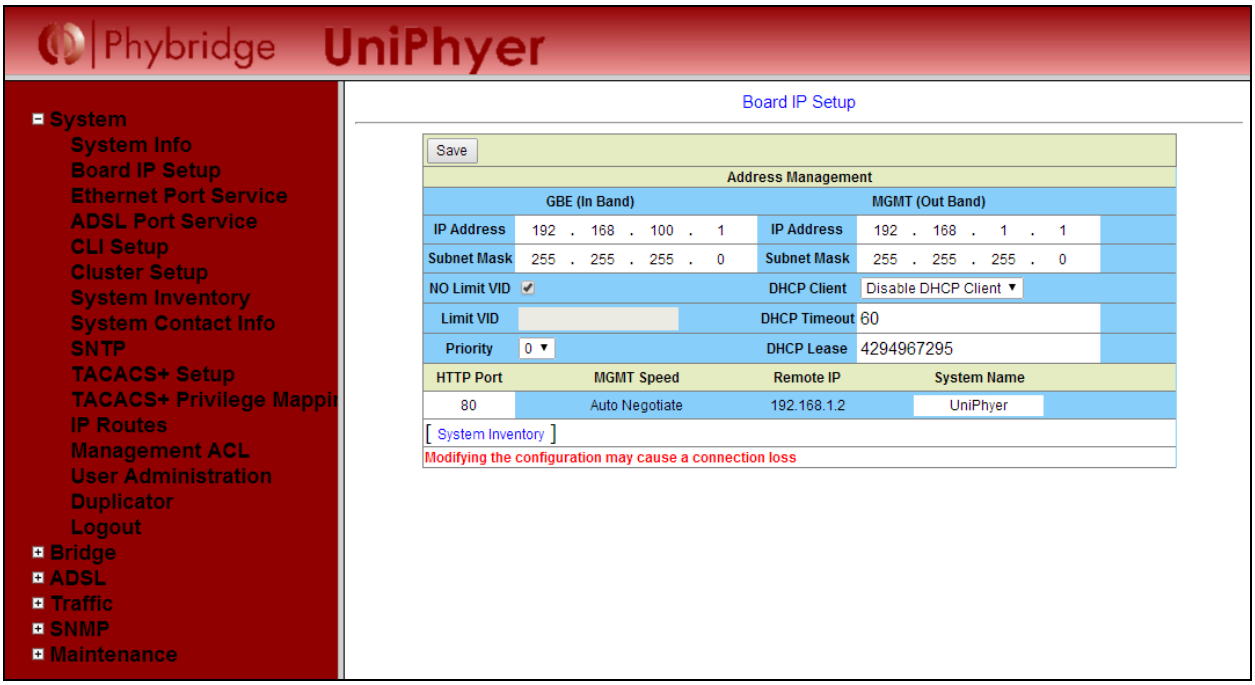
All remaining configuration settings on UniPhyer were left as default in this sample configuration.

7.1. Launch Web Interface

Access the UniPhyer web interface by using the URL "**http://ip-address**" in an Internet browser window, where "ip-address" is a valid IP address of the UniPhyer switch. The default IP address of the UniPhyer management port is "**192.168.1.1**" and the default IP address of the UniPhyer GBE ports is "**192.168.100.1**". In this example, the web interface of the UniPhyer switch was accessed by the management port. The **Web Interface Login** screen is displayed as shown below. Log in using the appropriate credentials.

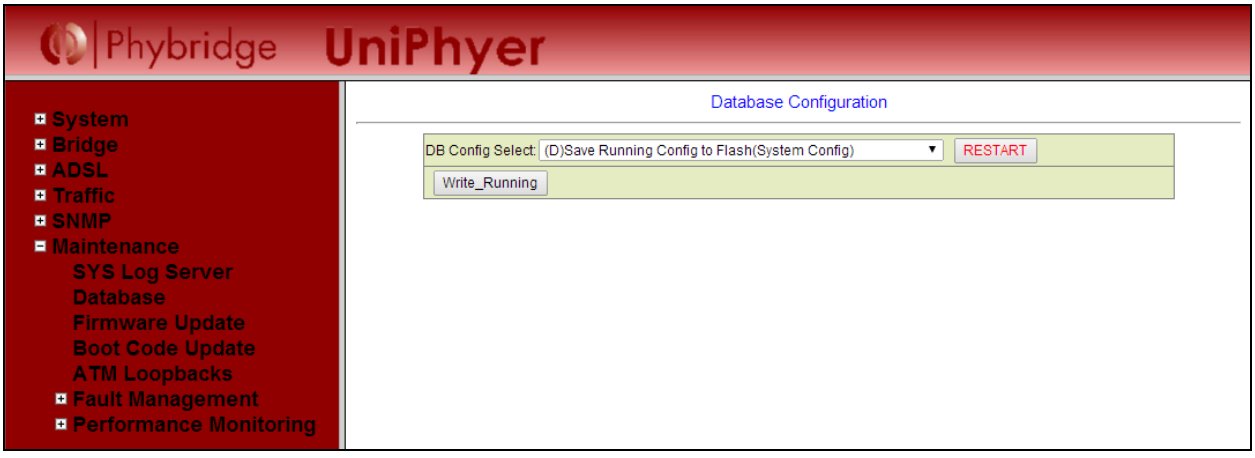
7.2. Administer Phybridge UniPhyer IP Address

In the subsequent screen (not shown), select **System → Board IP Setup** from the left panel. In the **Board IP Setup** panel on the right, the IP address configuration of the UniPhyer switch can be changed as needed. Click **Save** when finished. The default values were used for the sample configuration of the UniPhyer switch as shown below.



7.3. Save Running Configuration

Next, navigate to **Maintenance → Database** to save the running configuration to flash. In the **DB Config Select** field, select option **D** and click the **Write_Running** button.



8. Verification Steps

This section provides tests that can be performed to verify proper configuration of Communication Manager, Session Manager and UniPhyer.

8.1. Verify Avaya Aura® Communication Manager

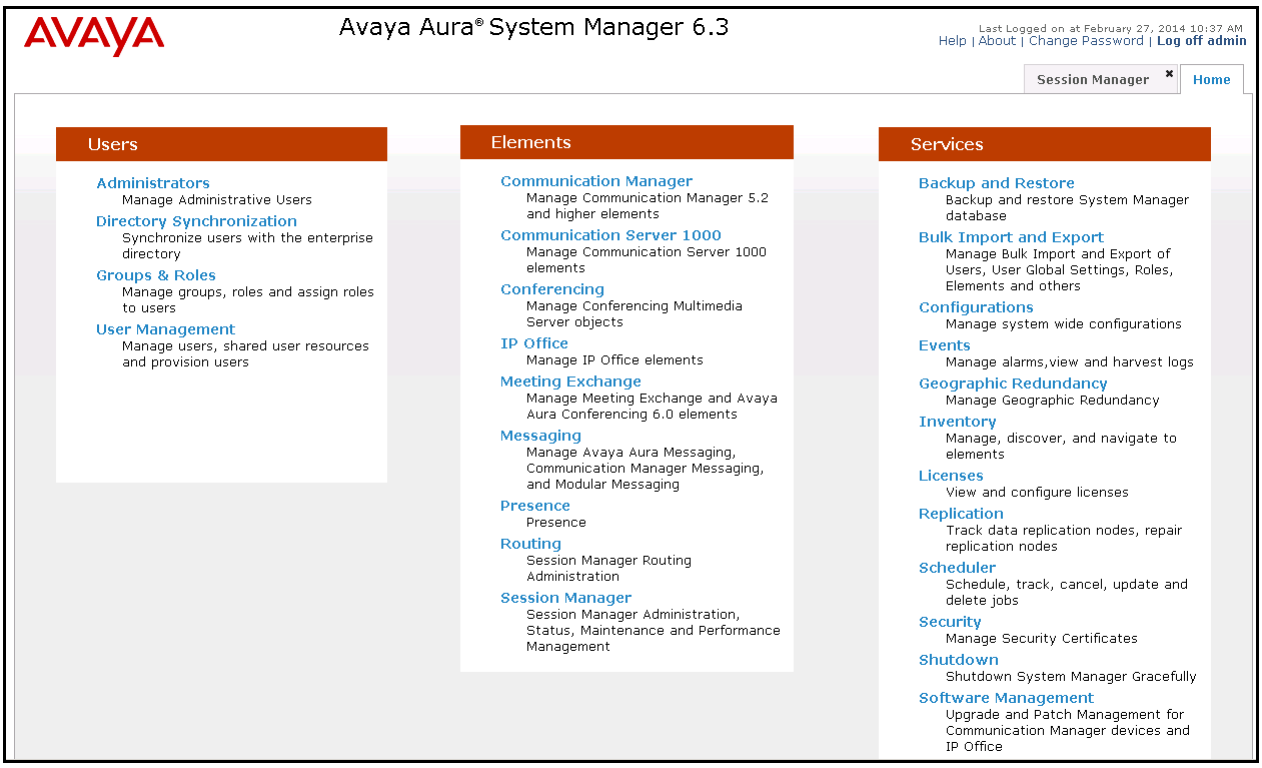
This section verifies the registration of H.323 IP phones on Communication Manager. Use the **list registered-ip-stations** command to verify that all H.323 IP stations connected via the UniPhyer registered successfully with Communication Manager, as shown below.

```
list registered-ip-stations

                          REGISTERED IP STATIONS

Station Ext   Set Type/ Prod ID/   TCP Station IP Address/
or Orig Port  Net Rgn   Release    Skt Gatekeeper IP Address
------------- --------- ---------- --- ---------------------------------------
53010         4625      IP_Phone    y  10.33.5.178
              1          3.103S        192.168.97.201
53011         4625      IP_Phone    y  10.33.5.34
              1          6.2313        192.168.97.201
53012         4625      IP_Phone    y  10.33.5.26
              1          6.2313        192.168.97.201
53013         9608      IP_Phone    y  10.33.5.52
              1          6.2313        192.168.97.201
53015         4620      IP_Phone    y  10.33.5.12
              1          2.300         192.168.97.201
53016         9620      IP_Phone    y  192.168.98.50
              1          6.3116        192.168.97.201
53044         9640      IP_Phone    y  10.33.5.53
              1          3.210A        192.168.97.201
```

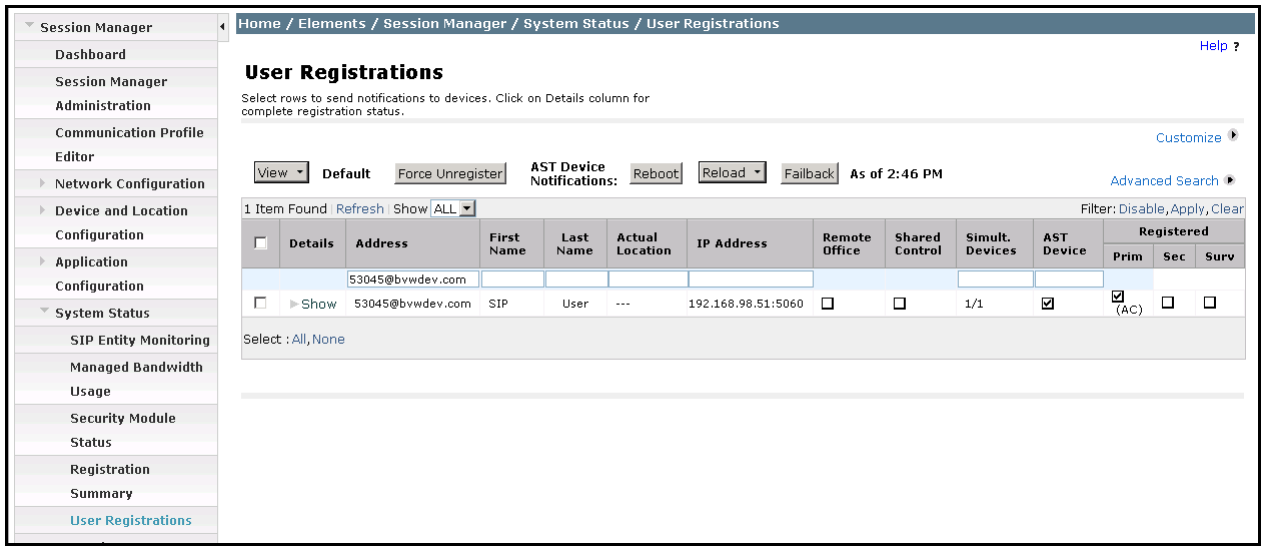
8.2. Verify Avaya Aura® Session Manager

This section verifies the registration of SIP IP phones on Session Manager. Access the browser-based GUI of System Manager, using the URL **http://<FQDN >/SMGR**, where "<FQDN>" is the fully qualified domain name of System Manager. Log in to System Manager with the appropriate credentials (not shown).

From the main System Manager page click on the **Session Manager** link in the **Elements** column as shown in the following figure.

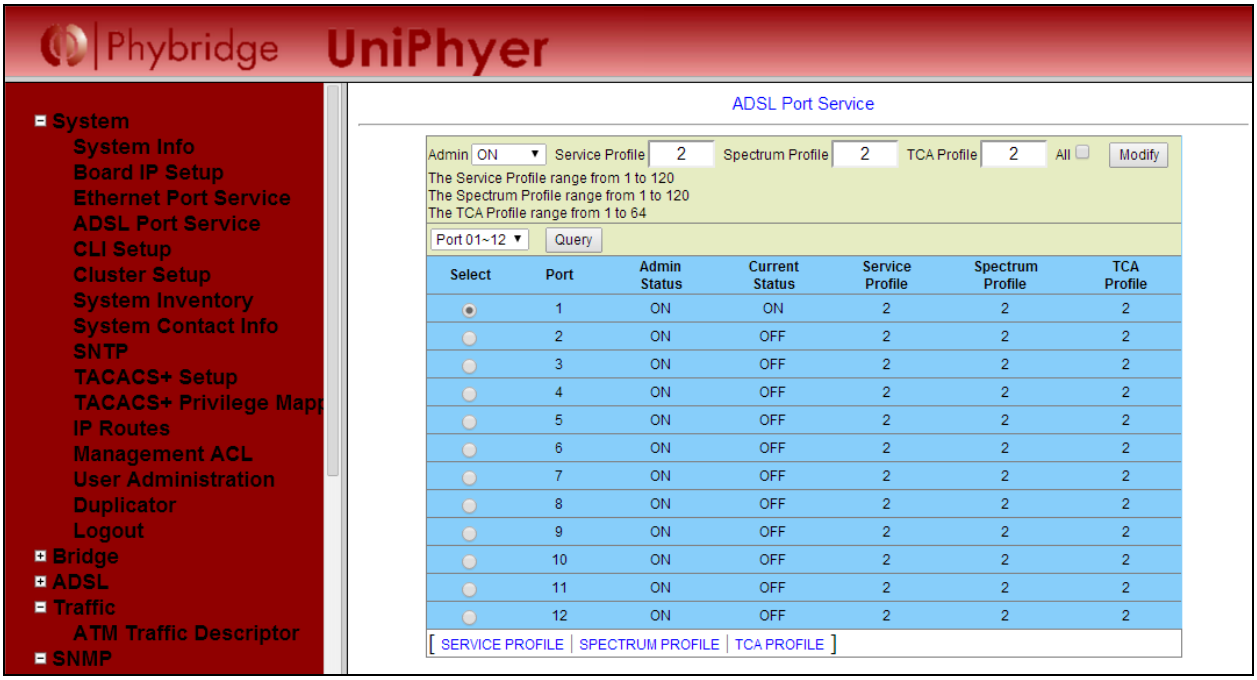


In the next screen that opens, expand **System Status** from the navigation tree on the left. Now select **User Registrations** under **System Status**. As shown below, a search was performed for user 53045@bvwdev.com that was used in this sample configuration. It is shown to be registered by the checkmark in the **Prim** column.



8.3. Verify Phybridge UniPhyer

From the UniPhyer web interface, select **SYSTEM → ADSL Port Service** from the left panel. Verify the **Current Status** for ports that have physically connected IP Phones is **ON**, as shown below for port 1.



9. Conclusion

These Application Notes describe the configuration steps required for Phybridge UniPhyer to interoperate with Avaya IP telephones (H.323) registered to Avaya Aura® Communication Manager and Avaya IP telephones (SIP) registered to Avaya Aura® Session Manager. All feature and serviceability test cases were completed and passed as per **Section 2** with observations explained in **Section 2.2**.

10. Additional References

This section references the product documentation relevant to these Application Notes.

Documentation for Avaya products may be found at http://support.avaya.com.

Avaya Aura® Communication Manager

[1] Administering Avaya Aura® Communication Manager, Release 6.3, Document Number 03-300509, Issue 9, October 2013

[2] Avaya Aura® Communication Manager Feature Description and Implementation, Release 6.3, Document Number 555-245-205, Issue 11, October 2013

[3] Avaya one-X™ Deskphone Edition for 9600 Series IP Telephones Administrator Guide Release 3.1, Document Number 16-300698, Issue 7, November 2009

Documentation for Phybridge products may be found at http://phybridge.com**.**

Phybridge UniPhyer Switch

[4] Phybridge – UniPhyer Web Configuration Tool Guide, Part Number 8003-03, Issue 2, May 2009

[5] NON POE devices on a PhyAdater or PhyLink, document 009-011 TS – 017 Version 002, 27 December 2012

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.