Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Yealink VP530 SIP Video Deskphone with Avaya Aura® Communication Manager R6.2 and Avaya Aura® Session Manager R6.2 – Issue 1.0

Abstract

These Application Notes describe the configuration steps for provisioning Yealink VP530 SIP Video Deskphone to interoperate with Avaya Aura® Communication Manager and 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 the steps required to connect Yealink VP530 SIP video deskphone (VP530) to a SIP infrastructure consisting of Avaya Aura® Session Manager and Avaya Aura® Communication Manager. Yealink VP530 is a 7 inch TFT colour touch screen with 3 line appearances, range of on board menus including an 18 key Busy Lamp Field. Also described is how Avaya Aura® Communication Manager features can be made available in addition to the standard features supported in Yealink VP530. In this configuration, the Off-PBX Stations (OPS) feature set is extended from Avaya Aura® Communication Manager to Yealink VP530, providing Yealink VP530 with enhanced calling features.

2. General Test Approach and Test Results

The interoperability compliance testing evaluates the ability of Yealink VP530 to make and receive both voice and video calls to and from Avaya H.323 and SIP deskphones as well as the Avaya Flare and Avaya one-X Communicator using video. Avaya Aura® Messaging was used to allow users leave voicemail messages and to demonstrate Message Waiting Indication and DTMF control on Yealink VP530.

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

The compliance testing included the test scenarios shown below. Note that when applicable, all tests were performed with Avaya SIP deskphones, Avaya H.323 deskphones, Avaya Flare, Avaya one-X Communicator and Yealink VP530.

- Basic Calls with only audio
- Basic Calls with audio and video
- Hold and Retrieve with only audio
- Hold and Retrieve with audio and video
- Attended and Blind Transfer with only audio
- Attended and Blind Transfer with audio and video
- Call Forwarding Unconditional, No Reply and Busy
- Call Waiting
- Call Park/Pickup
- Conference with only audio
- Conference with audio and video
- Calling Line Name/Identification
- Codec Support
- DTMF Support
- Message Waiting Indication

2.2. Test Results

The following observations were noted during testing.

- When call forward busy was activated on Communication Manager the calls did not forward to the forwarded number of the Yealink VP530 SIP endpoint, this is not an issue with Yealink VP530.
- When using BLF key for Call Pickup this needs to be set so DSS Key TYPE = Direct Pickup Call pickup on Yealink.
- Yealink supports up to 3-way audio conference and 3-way video conference.

2.3. Support

Support from Avaya is available by visiting the website http://support.avaya.com and a list of product documentation can be found in **Section 11** of these Application Notes. Technical support for the Yealink deskphones can be obtained as follows:

- http://www.yealink.co.uk/support/
- email: support@yealink.co.uk
- Tel: +44 (0) 161 763 2060

3. Reference Configuration

Figure 1 shows the network topology during compliance testing. Yealink VP530 is placed on the Telephony LAN. The VP530 registers as a third-party SIP user with Session Manager in order to be able to make/receive calls to and from the Avaya H.323 and SIP deskphones and video calls to the Avaya Flare and Avaya one-X Communicator.

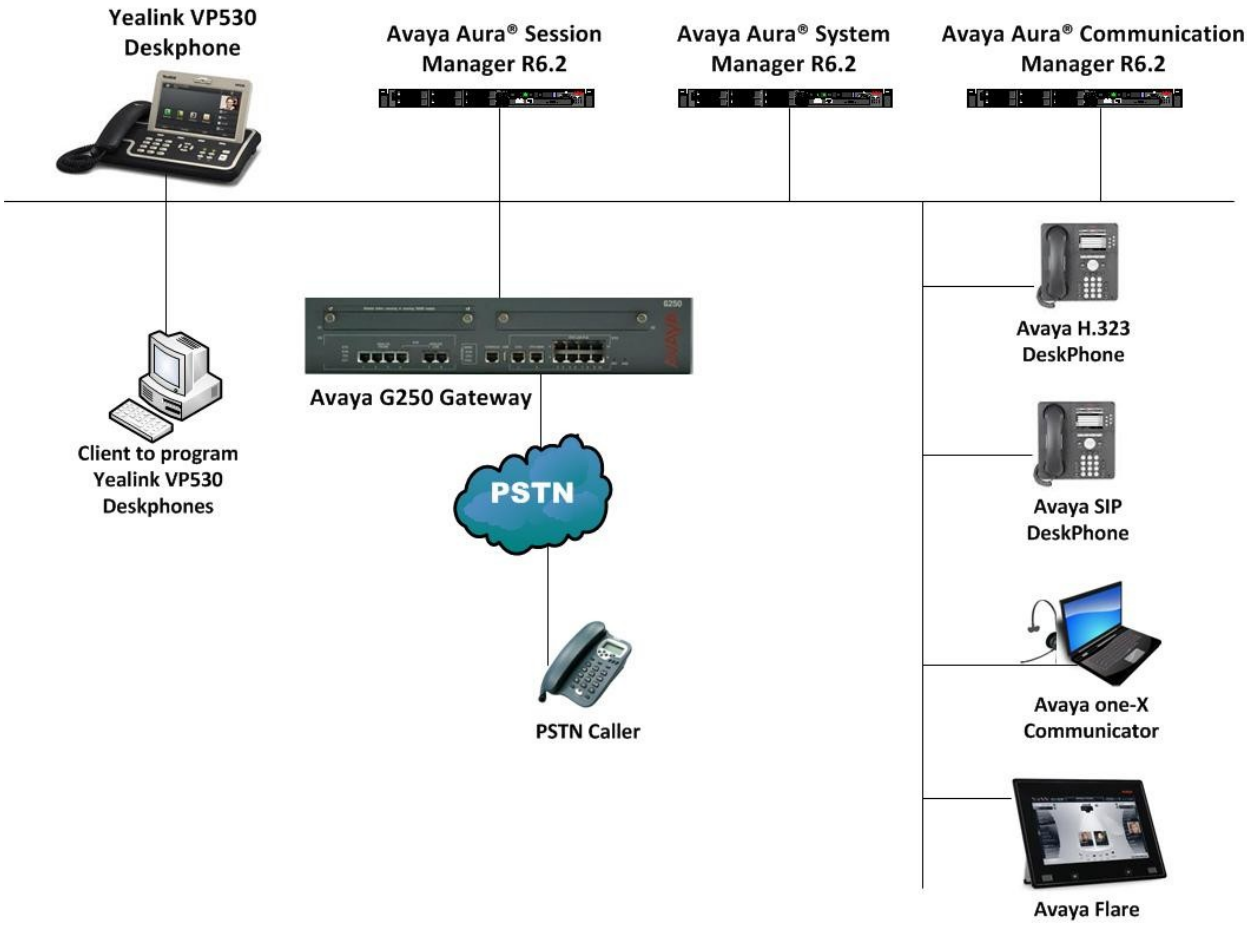


Figure 1: Network Solution of Yealink VP530 SIP Deskphone with Avaya Aura® Communication Manager R6.2 and Avaya Aura® Session Manager R6.2

4. Equipment and Software Validated

The following equipment and software was used for the compliance test.

Equipment/Software	Release/Version
Avaya Aura® Communication Manager running on Avaya S8800 Server	R6.2 SP4 (R016x.02.0.823.0)
Avaya Aura® System Manager running on Avaya S8800 Server	R6.2 SP4 (6.2.0.0.15669)
Avaya Aura® Session Manager running on Avaya S8800 Server	R6.2 SP3 (6.2.3.0.623006)
Avaya Aura® Messaging running on S8800 Server	R6.1
Avaya 96xx Series Deskphone	96xx H.323 Release 3.1 SP2
Avaya 96xx Series Deskphone	96xx SIP Release 2.6 SP3
Avaya Flare	Signalling Protocol: SIP
Avaya one-X Communicator	R6.1.7.04-SP7-39506 Signalling Protocol: SIP
Yealink VP530	SW Ver 23.70.0.40 HW Ver 23.5.1.201.18.0.8

5. Configure Avaya Aura® Communication Manager

It is assumed that a fully functioning Communication Manager is in place with the necessary licensing with a SIP Trunk in place to Session Manager. For further information on the configuration of Communication Manager please see **Section 11** of these Application Notes. The following sections go through the following.

- Verify System Capacity
- Dial Plan Analysis
- Feature Access Codes
- IP Interfaces
- Network Region
- IP Codec
- Verify Off PBX Station Mapping

5.1. Verify System Capacity

The license file installed on the system controls these attributes. If a required feature is not enabled or there is insufficient capacity, contact an authorized Avaya sales representative. Use the **display system-parameters customer-options** command to determine these values. On **Page 1**, verify that the **Maximum Off-PBX Telephones** allowed in the system is sufficient. One OPS station is required per Yealink VP530.

```
display system-parameters customer-options                    Page   1 of  11
                              OPTIONAL FEATURES

    G3 Version: V16                              Software Package: Enterprise
      Location: 2                                 System ID (SID): 1
      Platform: 28                                Module ID (MID): 1

                                                          USED
                              Platform Maximum Ports: 65000 57
                                   Maximum Stations: 41000 31
                           Maximum XMOBILE Stations: 41000 0
                  Maximum Off-PBX Telephones - EC500: 41000 3
                  Maximum Off-PBX Telephones -   OPS: 41000 19
                  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
```

5.2. Configure Dial Plan Analysis

Use the **change dialplan analysis** command to configure the dial plan using the parameters shown below. Extension numbers (**ext**) are those beginning with **2**, **3**, **4** and **5**. Feature Access Codes (**fac**) use digits **8** and **9** or #.

```
change dialplan analysis                                    Page   1 of  12
                           DIAL PLAN ANALYSIS TABLE
                                 Location: all            Percent Full: 1

   Dialed   Total  Call     Dialed   Total  Call     Dialed   Total  Call
   String   Length Type     String   Length Type     String   Length Type
   2           4   ext
   3           4   ext
   4           4   ext
   5           4   ext
   8           1   fac
   9           1   fac
   *           3   dac
   #           3   fac
```

5.3. Configure Feature Access Codes

Use the **change feature-access-codes** command to configure access codes which can be entered from VP530 deskphones to initiate Communication Manager call features. These access codes must be compatible with the dial plan described in **Section 5.2**. The following access codes need to be setup.

- **Answer Back Access Code : #22**
- **Auto Alternate Routing (AAR) Access Code : 8**
- **Auto Route Selection (ARS) - Access Code 1 : 9**
- **Call Park Access Code : #11**
- **Call Pickup Access Code : #12**

```
change feature-access-codes                                 Page   1 of  10
                              FEATURE ACCESS CODE (FAC)
        Abbreviated Dialing List1 Access Code:
        Abbreviated Dialing List2 Access Code:
        Abbreviated Dialing List3 Access Code:
Abbreviated Dial - Prgm Group List Access Code:
                     Announcement Access Code:
                       Answer Back Access Code: #22
                         Attendant Access Code:
     Auto Alternate Routing (AAR) Access Code: 8
   Auto Route Selection (ARS) - Access Code 1: 9     Access Code 2:
                 Automatic Callback Activation:        Deactivation:
Call Forwarding Activation Busy/DA:        All:        Deactivation:
   Call Forwarding Enhanced Status:        Act:        Deactivation:
                       Call Park Access Code: #11
                     Call Pickup Access Code: #12
CAS Remote Hold/Answer Hold-Unhold Access Code:
                 CDR Account Code Access Code:
                       Change COR Access Code:
```

```
                    Change Coverage Access Code:
```

5.4. Configure Node-Names IP

Shown below is an example of the nodes names used in the compliance testing. Use the **change node-names ip** command to configure the IP address of Session Manager. **SM100** is the **Name** used for Session Manager Security Module and **192.168.50.16** is the **IP Address**.

```
change node-names ip                                          Page   1 of   2
                                  IP NODE NAMES
    Name                  IP Address
SM100                   192.168.50.16
default                 0.0.0.0
g250-dcp                192.168.50.18
procr                   192.168.50.13
procr6                  ::
```

5.5. Configure Network Region

Use the **change ip-network-region x** (where x is the network region to be configured) command to assign an appropriate domain name to be used by Communication Manager, in the example below **devcon.avaya** is used. Note this domain is also configured in **Section 6.1**.

```
change ip-network-region 1                                    Page   1 of  20
                            IP NETWORK REGION
  Region: 1
Location: 1       Authoritative Domain: devcon.avaya
    Name: default NR
MEDIA PARAMETERS                Intra-region IP-IP Direct Audio: yes
      Codec Set: 1              Inter-region IP-IP Direct Audio: yes
   UDP Port Min: 2048                     IP Audio Hairpinning? y
   UDP Port Max: 3329
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
```

5.6. Configure IP-Codec

Use the **change ip-codec-set x** (where x is the ip-codec set used) command to designate a codec set compatible with the VP530 deskphone, which support both **G.711A** and **G.729A**.

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

                         IP Codec Set

   Codec Set: 1

   Audio        Silence      Frames   Packet
   Codec        Suppression  Per Pkt  Size(ms)
 1: G.711A           n         2        20
 2: G.711U           n         2        20
 3: G.729A           n         2        20
```

5.7. Configuration of Coverage Path and Hunt Group for Voicemail

The coverage path setup used for compliance testing is illustrated below. Note the following:

Don't Answer is set to **y**	The coverage path will be used in the event the phone set is not answered
Number of Rings is set to **4**	The coverage path will be used after 4 rings
Point 1: is set to **h59**	Hunt Group 59 is utilised by this coverage path

```
display coverage path 59
                               COVERAGE PATH

                 Coverage Path Number: 59
    Cvg Enabled for VDN Route-To Party? n        Hunt after Coverage? n
                     Next Path Number:           Linkage

COVERAGE CRITERIA
    Station/Group Status    Inside Call     Outside Call
              Active?            n              n
                Busy?            y              y
      Don't Answer?              y              y         Number of Rings: 4
                 All?            n              n
 DND/SAC/Goto Cover?             y              y
   Holiday Coverage?             n              n

COVERAGE POINTS
    Terminate to Coverage Pts. with Bridged Appearances? n
  Point1: h59            Rng:    Point2:
  Point3:                        Point4:
  Point5:                        Point6:
```

The hunt group used for compliance testing is shown below. Note on **Page 1** the **Group Extension** is **5999** which is the voicemail pilot number for Messaging, and on **Page 2 Message Center** is set to **sip-adjunct**.

```
display hunt-group 59                                          Page   1 of  60
                                HUNT GROUP

           Group Number: 59                                 ACD? n
             Group Name: Voicemail                        Queue? n
        Group Extension: 5999                            Vector? n
             Group Type: ucd-mia                 Coverage Path:
                     TN: 1           Night Service Destination:
                    COR: 1                    MM Early Answer? n
          Security Code:                Local Agent Preference? n
 ISDN/SIP Caller Display: mbr-name
```

```
display hunt-group 59                                          Page   2 of  60
                                HUNT GROUP

                     Message Center: sip-adjunct

    Voice Mail Number        Voice Mail Handle         Routing Digits
                                                  (e.g., AAR/ARS Access Code)
    5999                     5999                      8
```

5.8. Verify Off PBX Station Mapping

Use the **display off-pbx-telephone station-mapping** command to verify that SIP Endpoints, added to Session Manager in **Section 6.3,** have been administered in Communication Manager. The example below shows that Station Extensions **3000** to **3012** are configured as **OPS**.

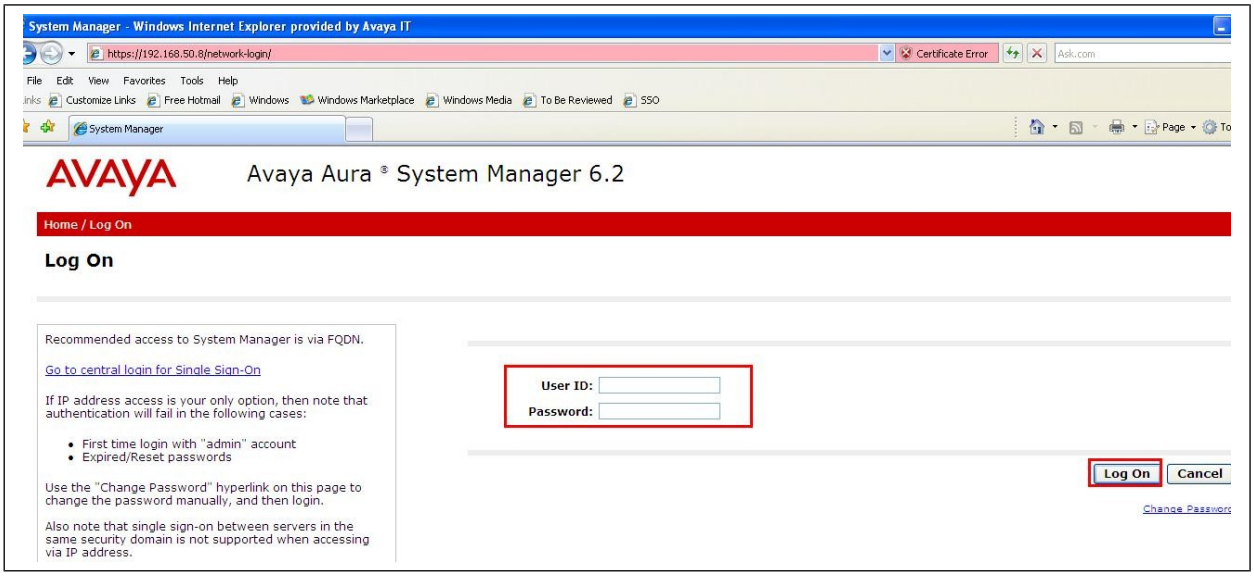
```
display off-pbx-telephone station-mapping                      Page   1 of   3
                 STATIONS WITH OFF-PBX TELEPHONE INTEGRATION

Station       Application Dial   CC  Phone Number    Trunk       Config  Dual
Extension                 Prefix                    Selection   Set     Mode
2000             OPS          -     2000             1          1
2000             EC500        -     3000             1          1
2001             OPS          -     2001             aar        1
2011             EC500        -     3001             1          1
2013             EC500        -     3006             1          1
3000             OPS          -     3000             1          1
3001             OPS          -     3001             1          1
3002             OPS          -     3002             1          1
3003             OPS          -     3003             1          1
3005             OPS          -     3005             1          1
3006             OPS          -     3006             1          1
3007             OPS          -     3007             1          1
3008             OPS          -     3008             1          1
3010             OPS          -     3010             1          1
3011             OPS          -     3011             1          1
3012             OPS          -     3012             1          1
```

6. Configure Avaya Aura® Session Manager

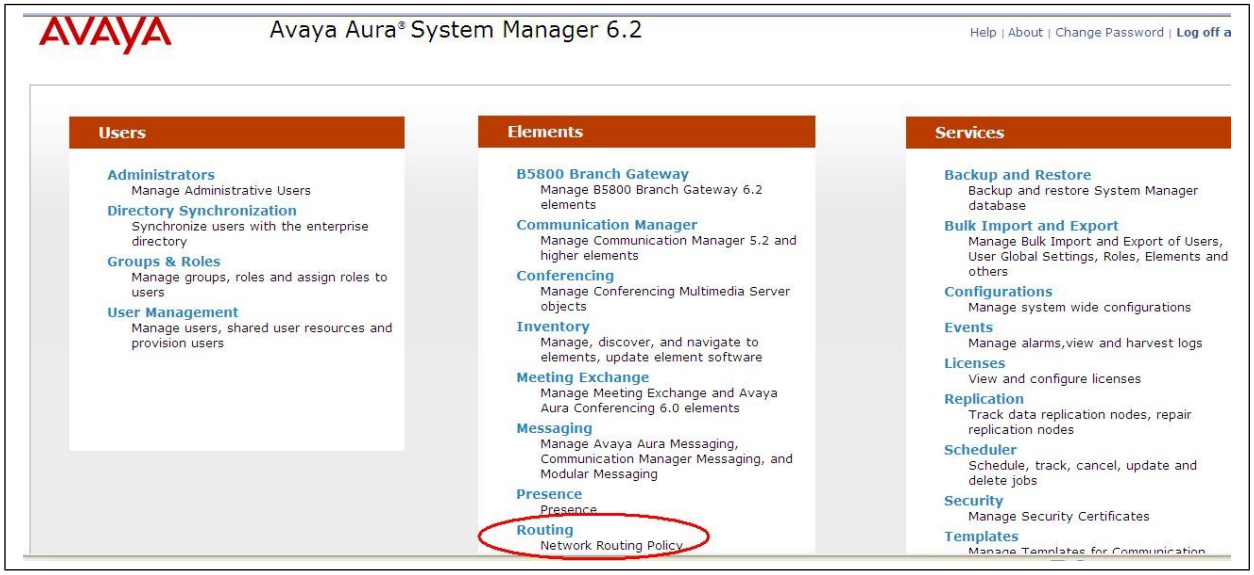
The Yealink VP530 deskphones are added to Session Manager as SIP Users. In order to make changes in Session Manager a web session to System Manager is opened.

6.1. Configuration of a Domain

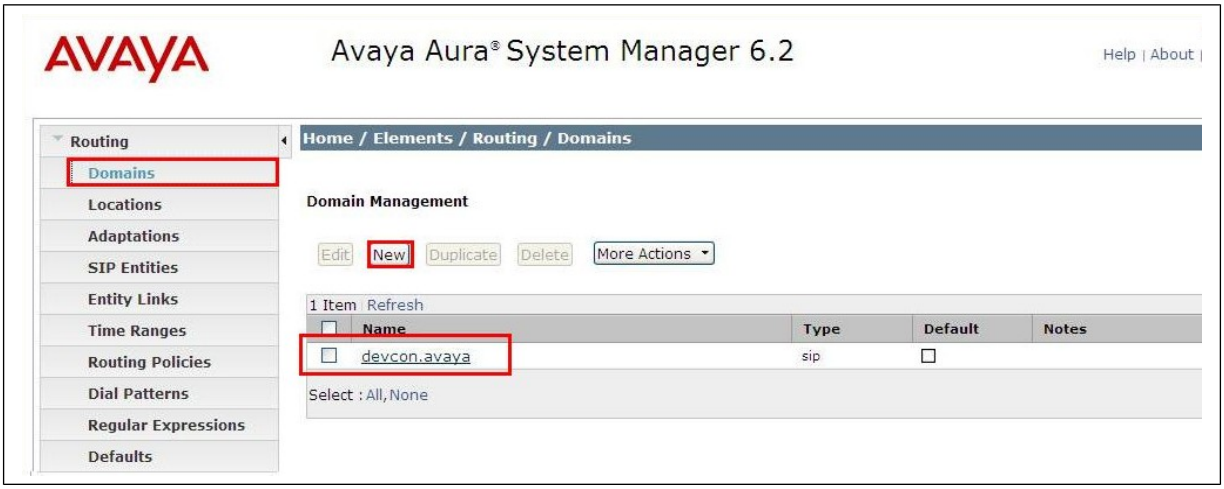
Navigate to http://<System Manager IP Address>/SMGR, enter the appropriate credentials and click on **Log On** as shown below.



Once logged in, click on **Routing** highlighted below.

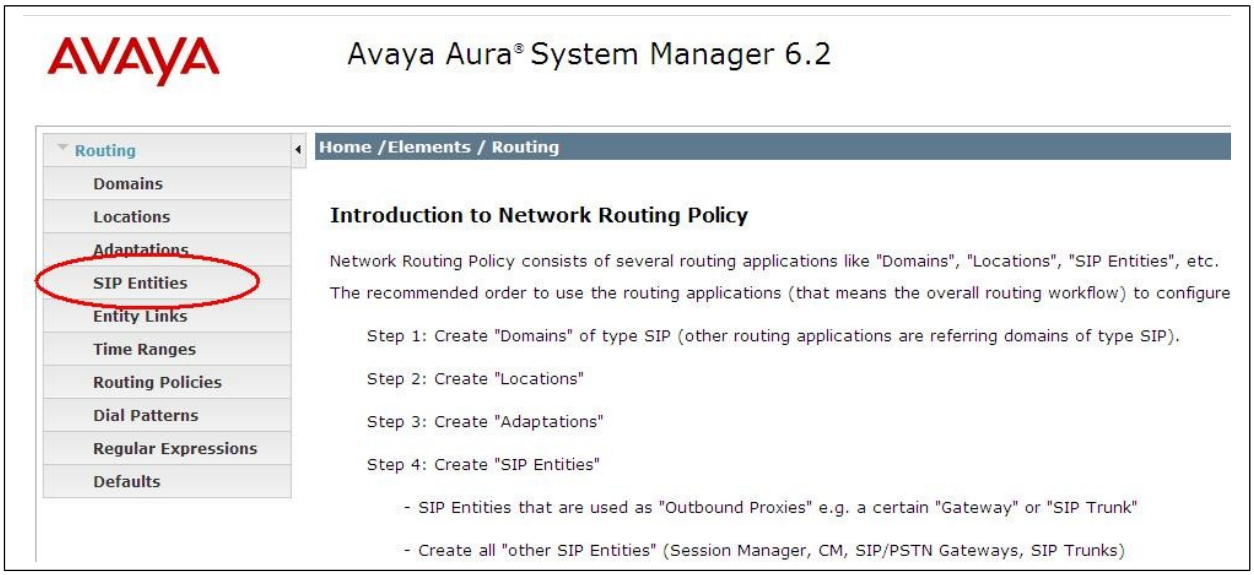


Click on **Domains** in the left window. If there is not a domain already configured click on **New** highlighted below and enter a suitable domain name. Note the domain **Name** used in the compliance testing was **devcon.avaya**. Note this domain is also referenced in **Section 5.5**.



6.2. Configuration of SIP Entities

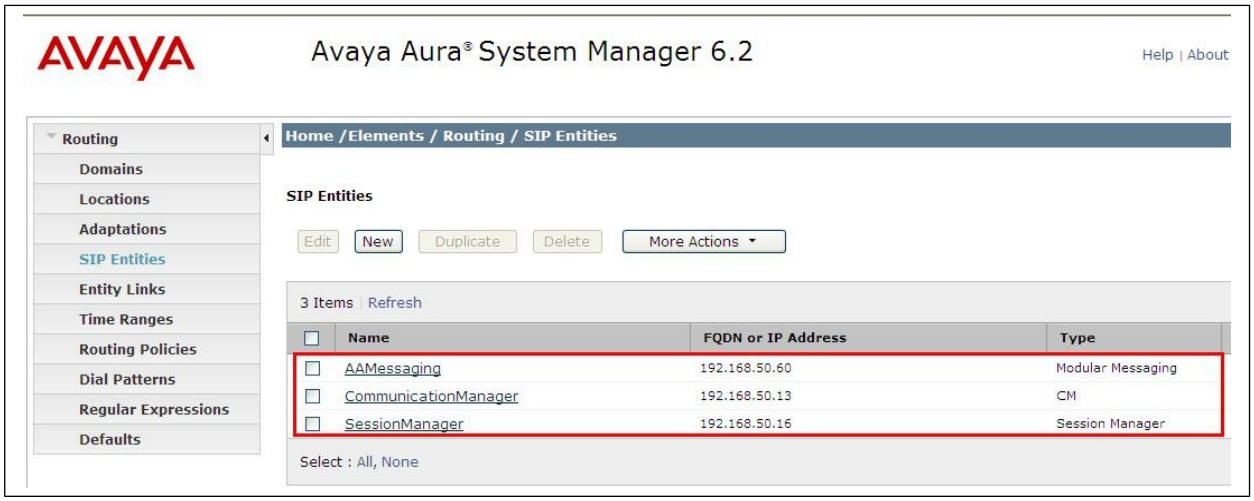
Log into System Manager as described in **Section 6.1** above, click on **SIP Entities** highlighted below.



Clicking on **SIP Entities** shows what SIP Entities have been added to the system and allows the addition of any new SIP Entity that may be required. Please note the SIP Entities present for the Compliance Testing of Yealink VP530 deskphones.

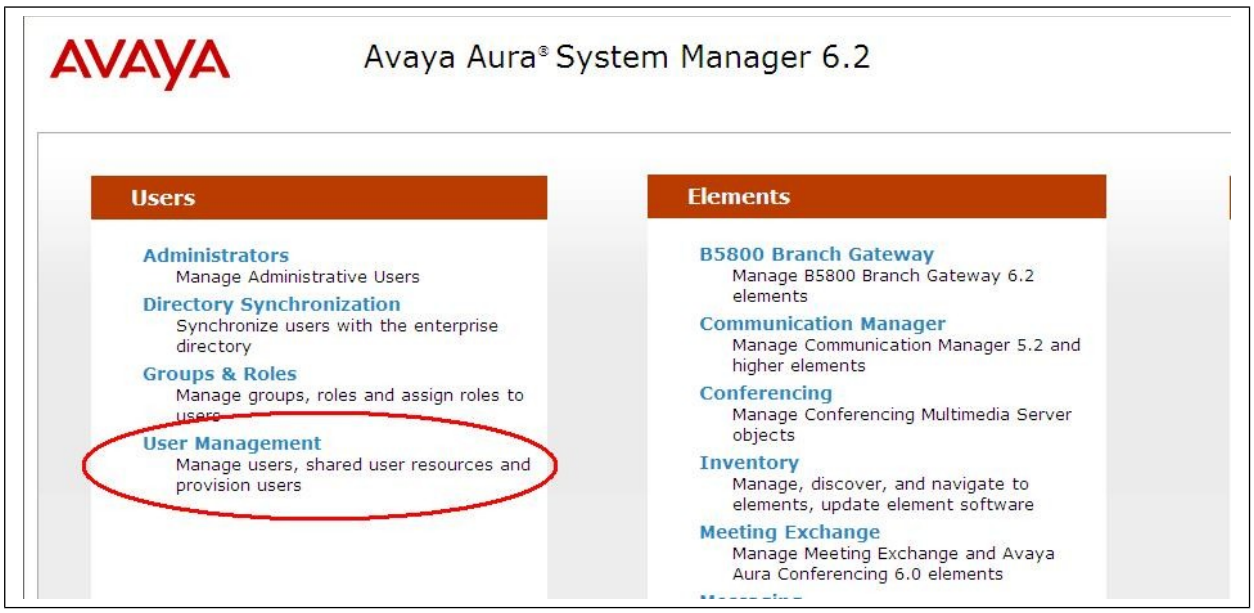
- Communication Manager SIP Entity
- Session Manager SIP Entity
- Messaging SIP Entity

Note: There is no SIP Entity present or required for Yealink.

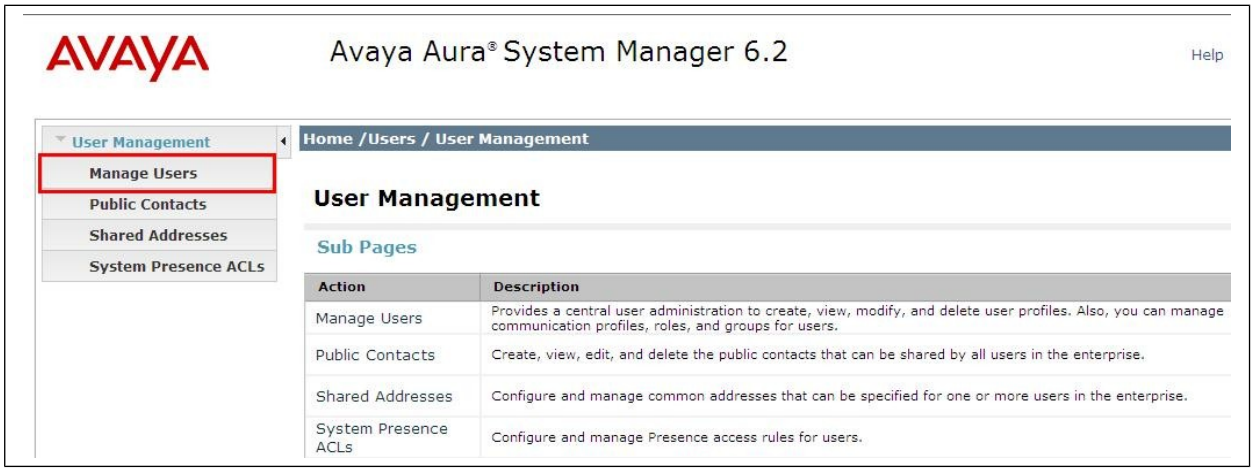


6.3. Adding Yealink VP530 SIP Users

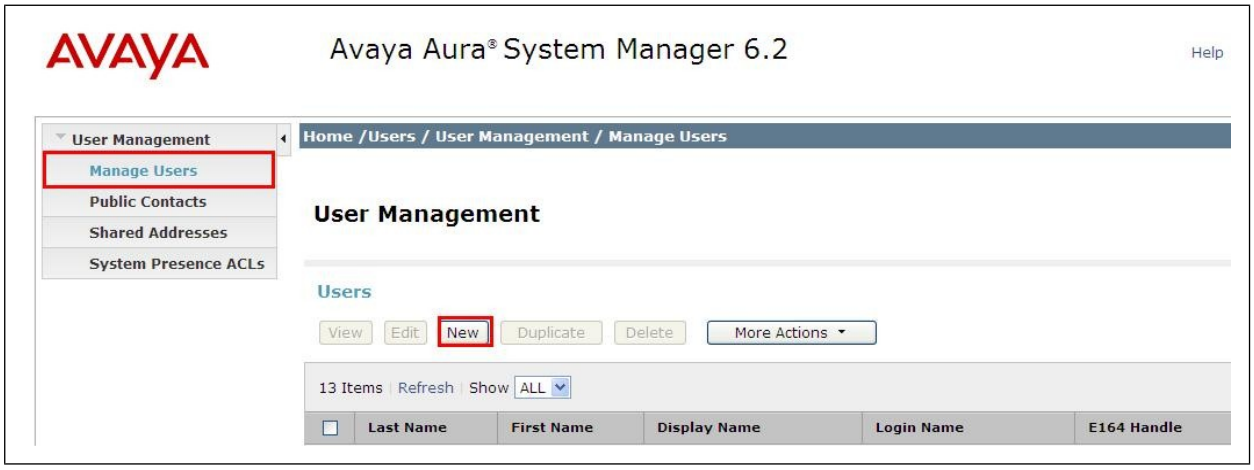
From the home page click on **User Management** highlighted below.



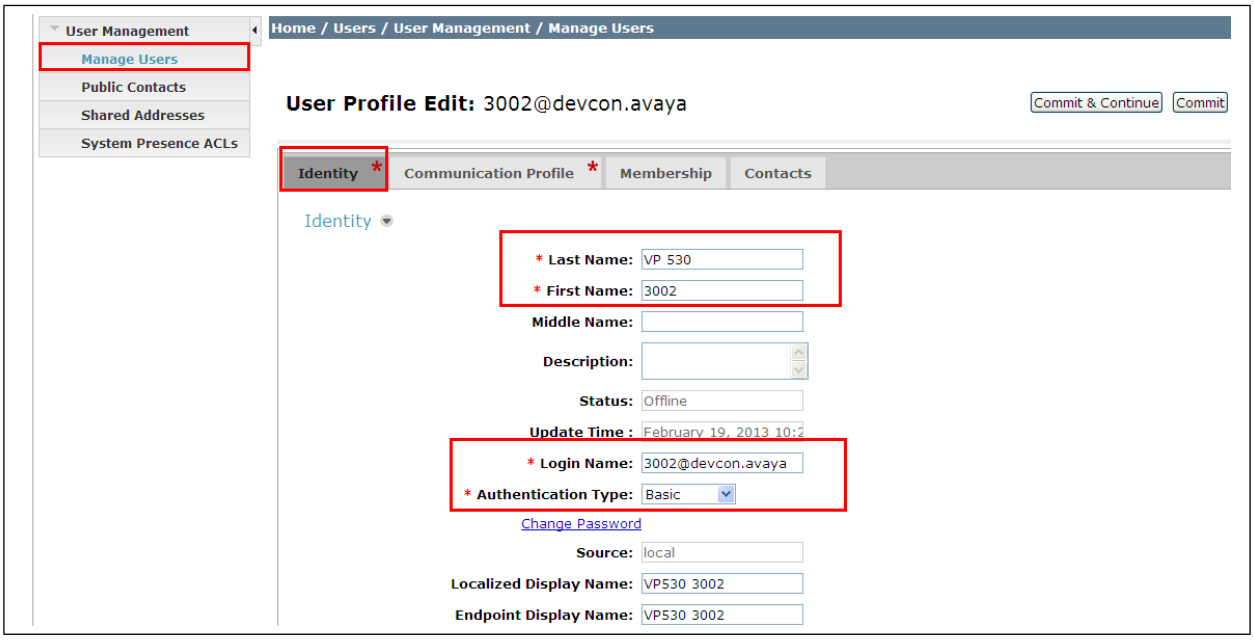
Click on **Manage Users**.



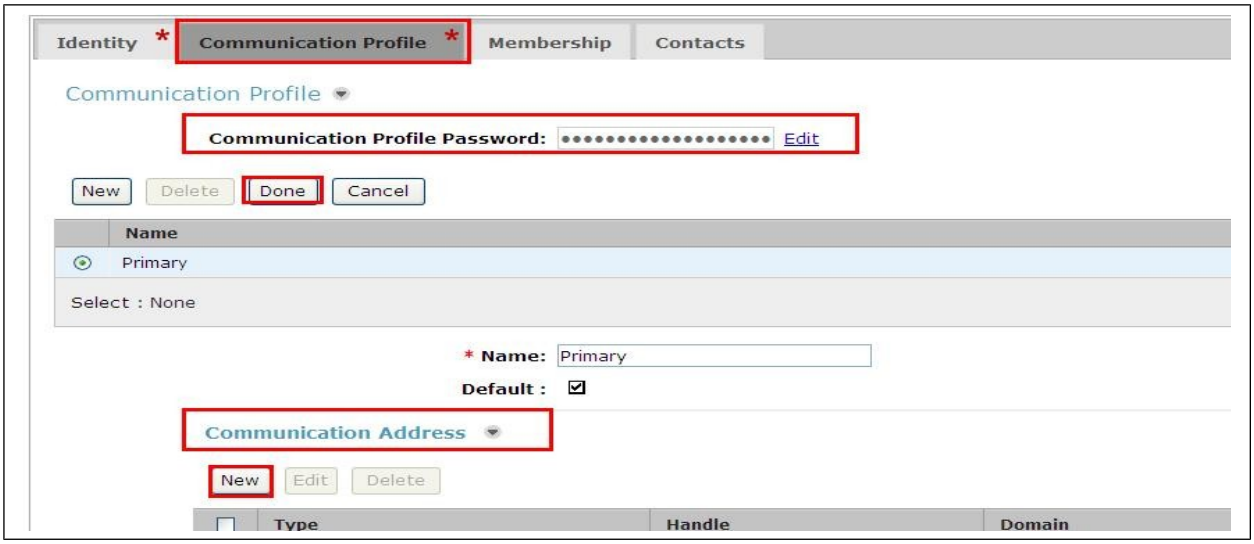
Click on **New** highlighted to add a new SIP user.



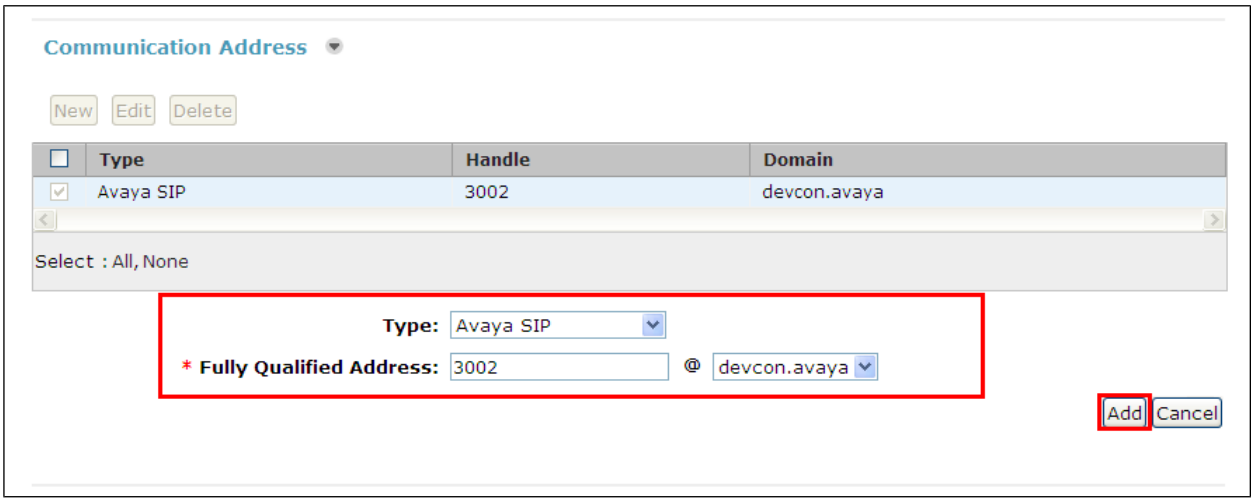
Under the **Identity** tab fill in the user's **Last Name** and **First Name** as shown below. Enter the **Login Name** and ensure **Authentication Type** is set to **Basic**.



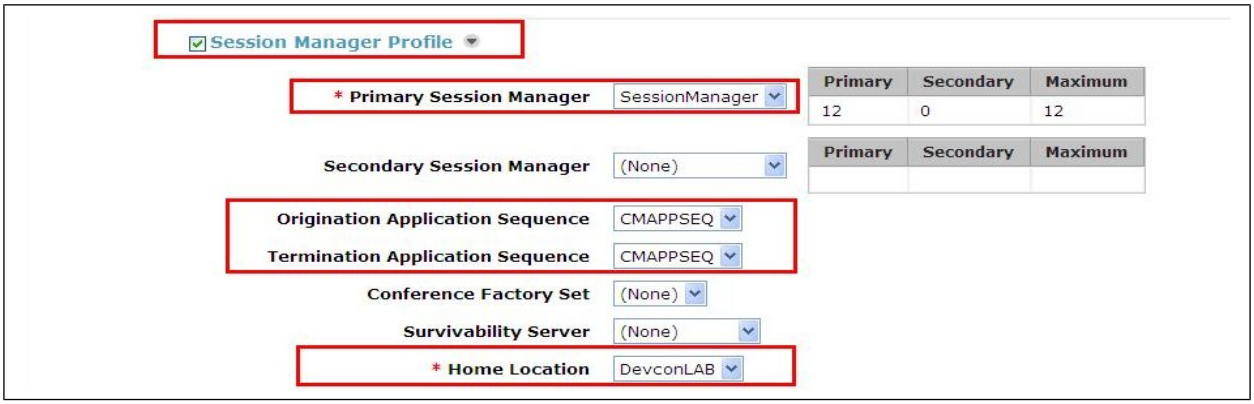
Under the **Communication Profile** tab enter a suitable **Communication Profile Password** and click on **Done** when added, note that this password is required when configuring the VP530 deskphone in **Section 8**. Click on **New** to add a new **Communication Address**.



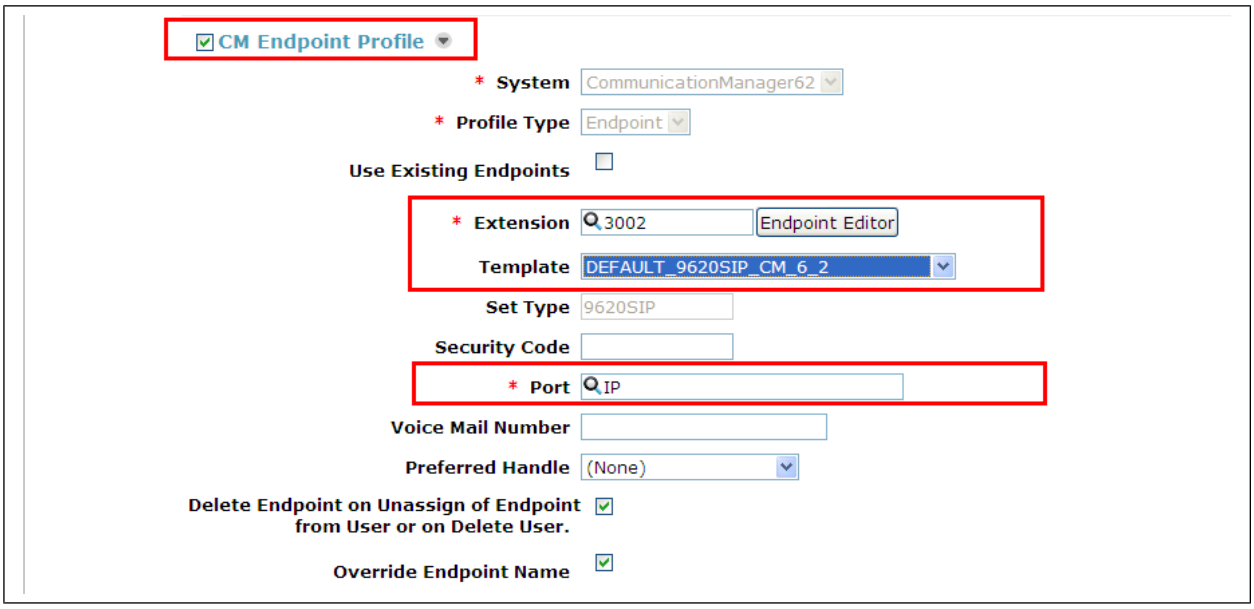
Enter the extension number and the domain for the **Fully Qualified Address** and click on **Add** once finished.



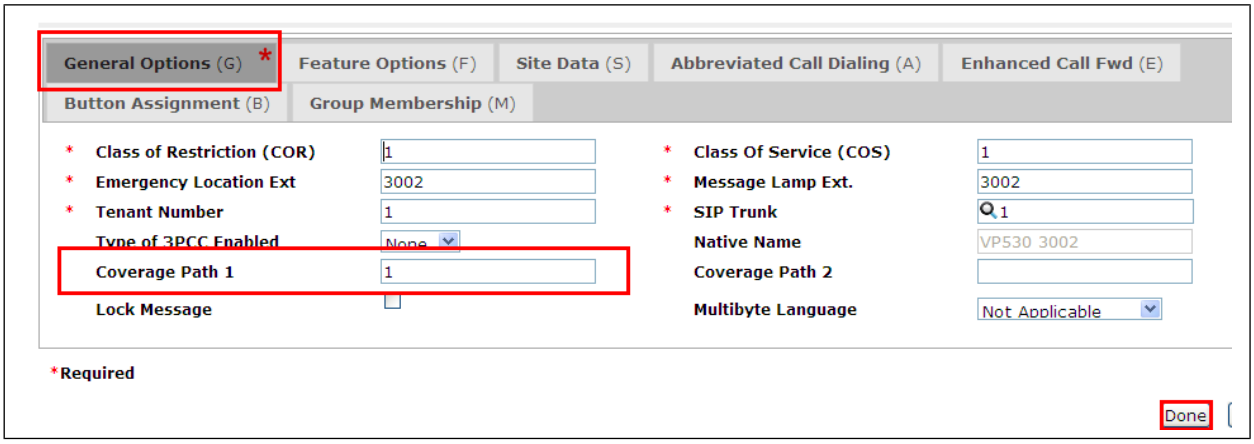
Ensure **Session Manager Profile** is checked and select the **Primary Session Manager**, select the **Origination Application Sequence** and the **Termination Application Sequence** and the **Home Location** as highlighted below.



Ensure that **CM Endpoint Profile** is selected and choose the **DEFAULT_9620SIP_CM_6_2** as the **Template** and ensure **Port** is set to **IP**. Click **Endpoint Editor** to configure the buttons and features for that handset on Communication Manager.



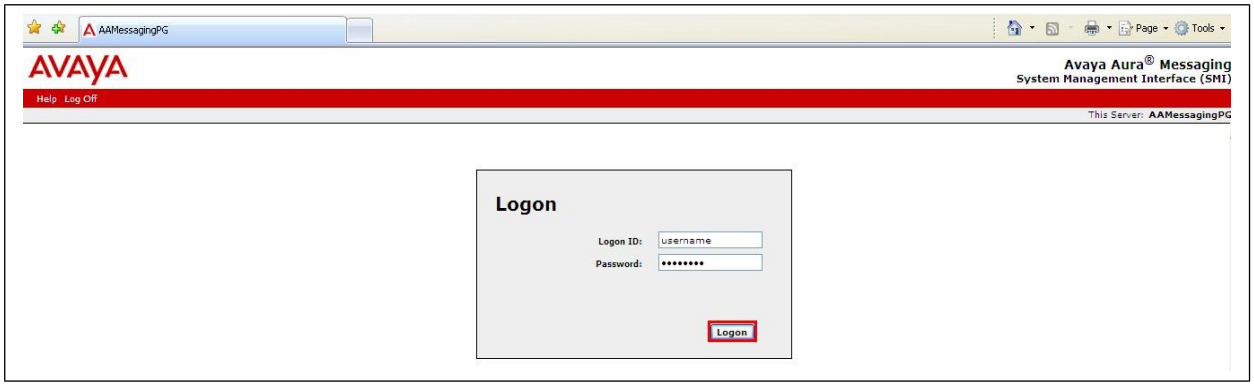
Under the **General Options** tab ensure that **Coverage Path 1** is set to that configured in **Section 5.6**. Also ensure that **Message Lamp Ext.** is showing the correct extension number. Click on **Done** once the information is filled correctly.



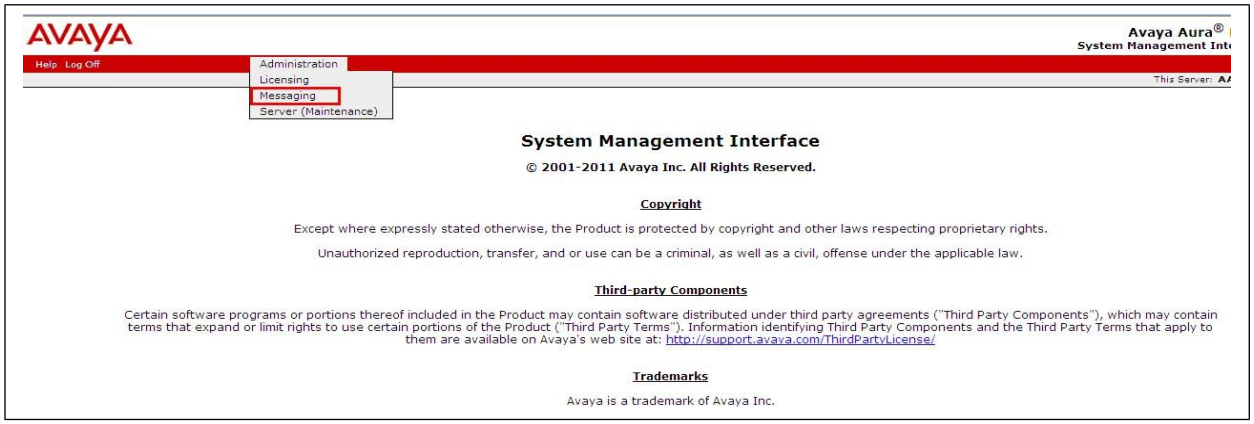
7. Configure Avaya Aura® Messaging

It is assumed that a fully working messaging system is in place and the necessary configuration for Communication Manager and Session Manager has already been done. For further information on the installation and configuration of Messaging please refer to **Section 11** of these Application Notes.

Navigate to http://<Messaging IP Address>. Enter the appropriate credentials and click on **Logon** highlighted below.

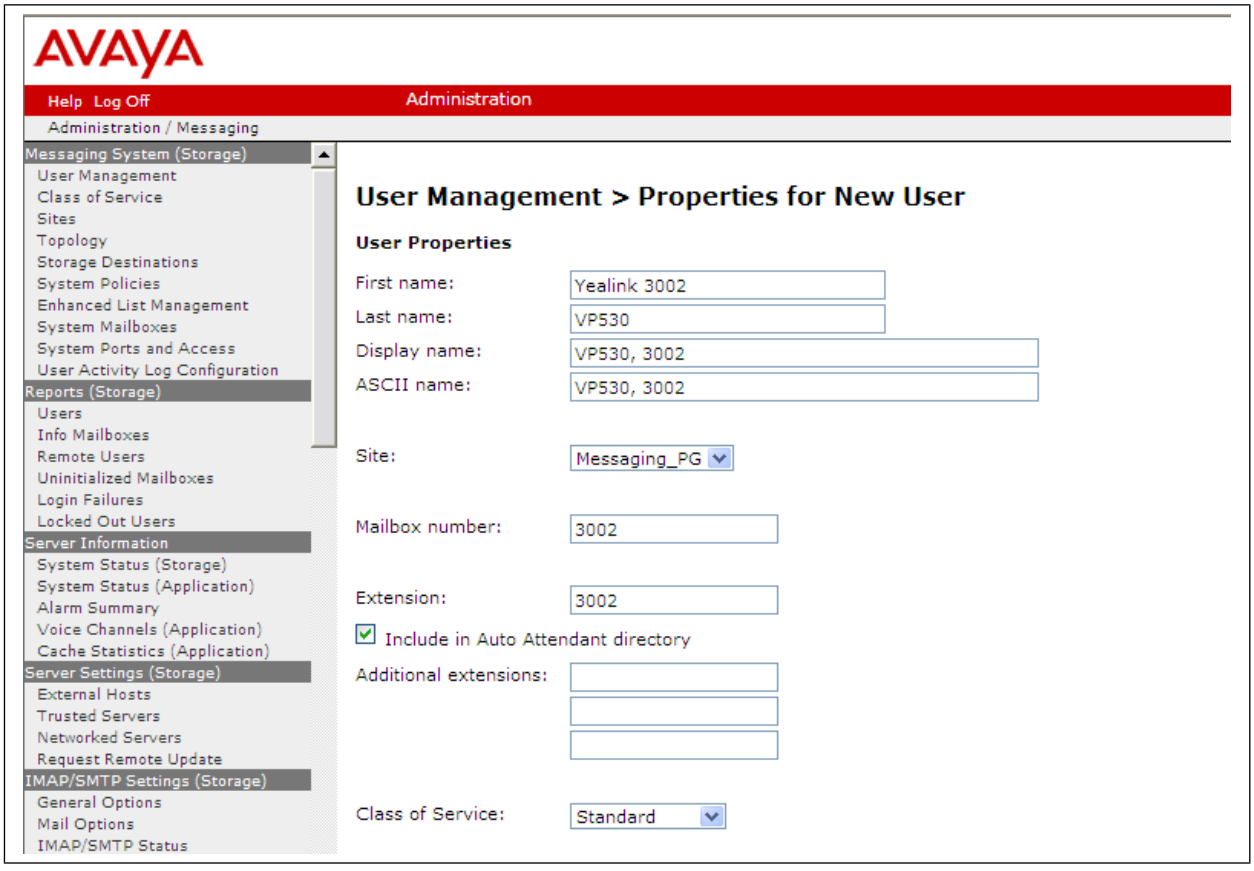


Once logged on select **Messaging** under **Administration** as shown below.

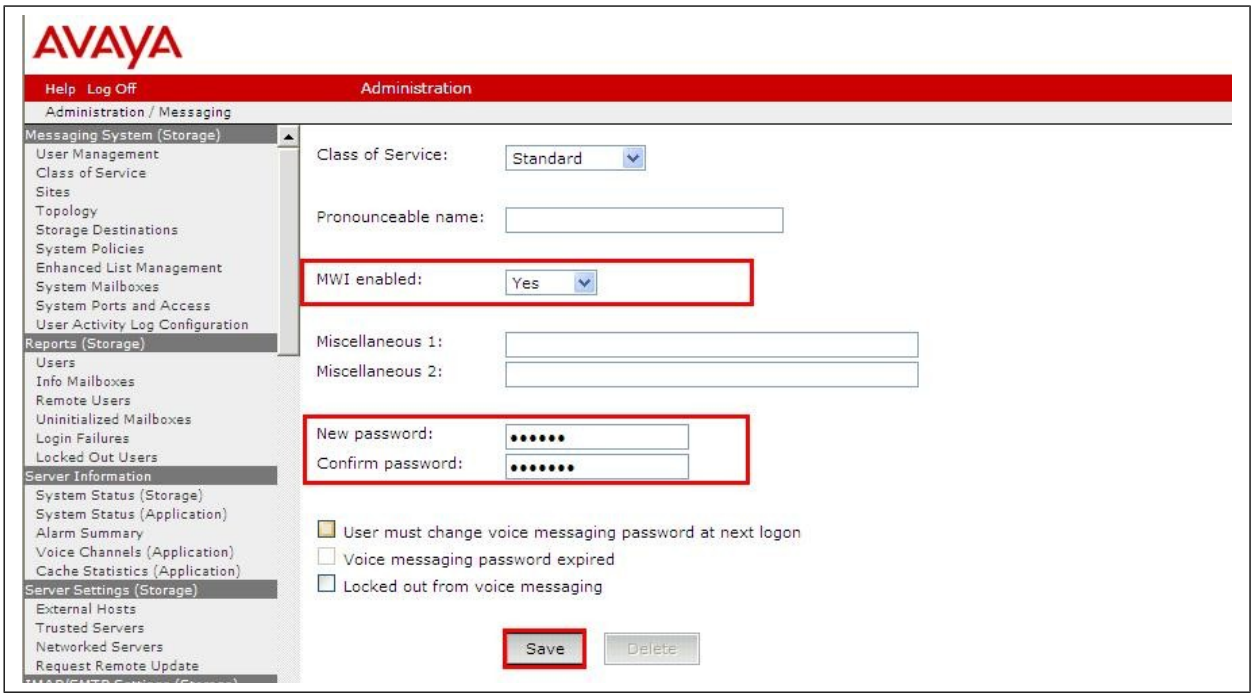


Click on **User Management** in the left hand column and click on **Add** under **Add User/Info Mailbox** as highlighted below.

Enter a suitable **First Name** and **Last Name**. Select the appropriate **Site** from the drop down box. Enter the correct **Mailbox number** and **Extension**. Select the appropriate **Class of Service**.



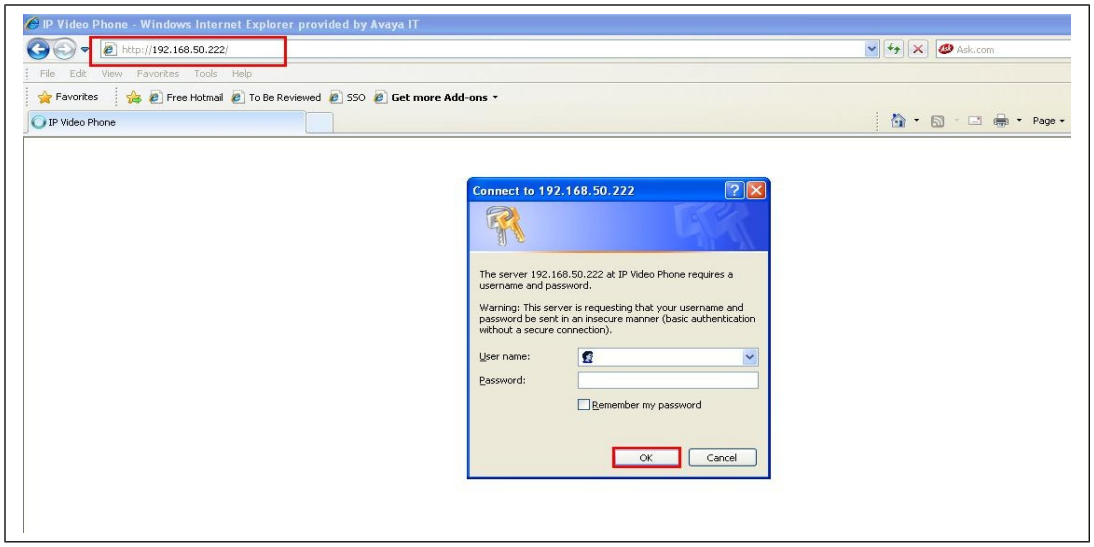
Ensure that **MWI Enabled** is set to **Yes**. Enter a suitable **password** and click on **Save** once finished.



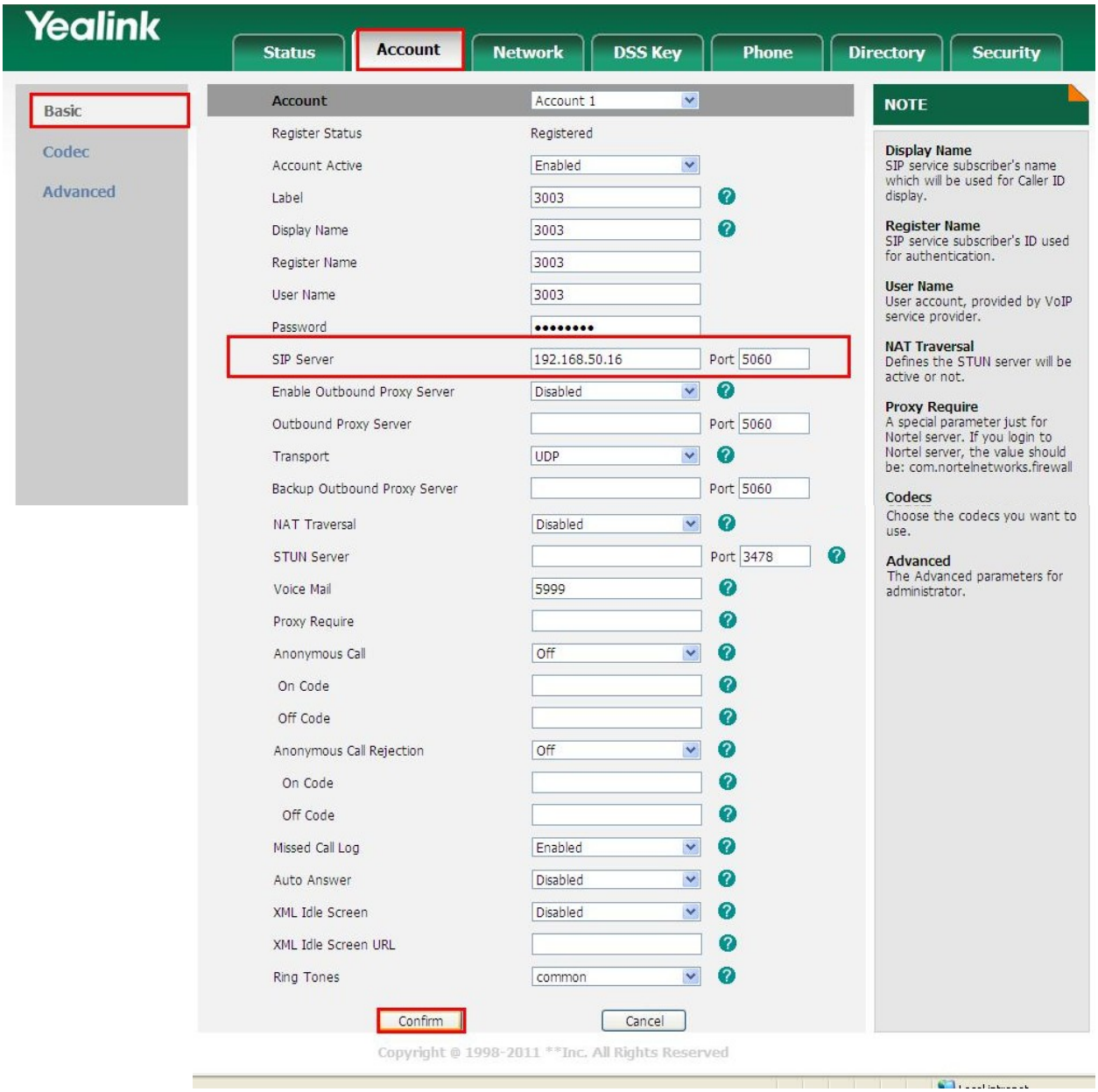
8. Configure Yealink VP530 SIP Video Deskphone

Configuration of Yealink VP530 is done using a web browser to the IP address of Yealink VP530. In order to obtain the IP address of the phone press the OK button located at the centre of the directional keys (not shown).

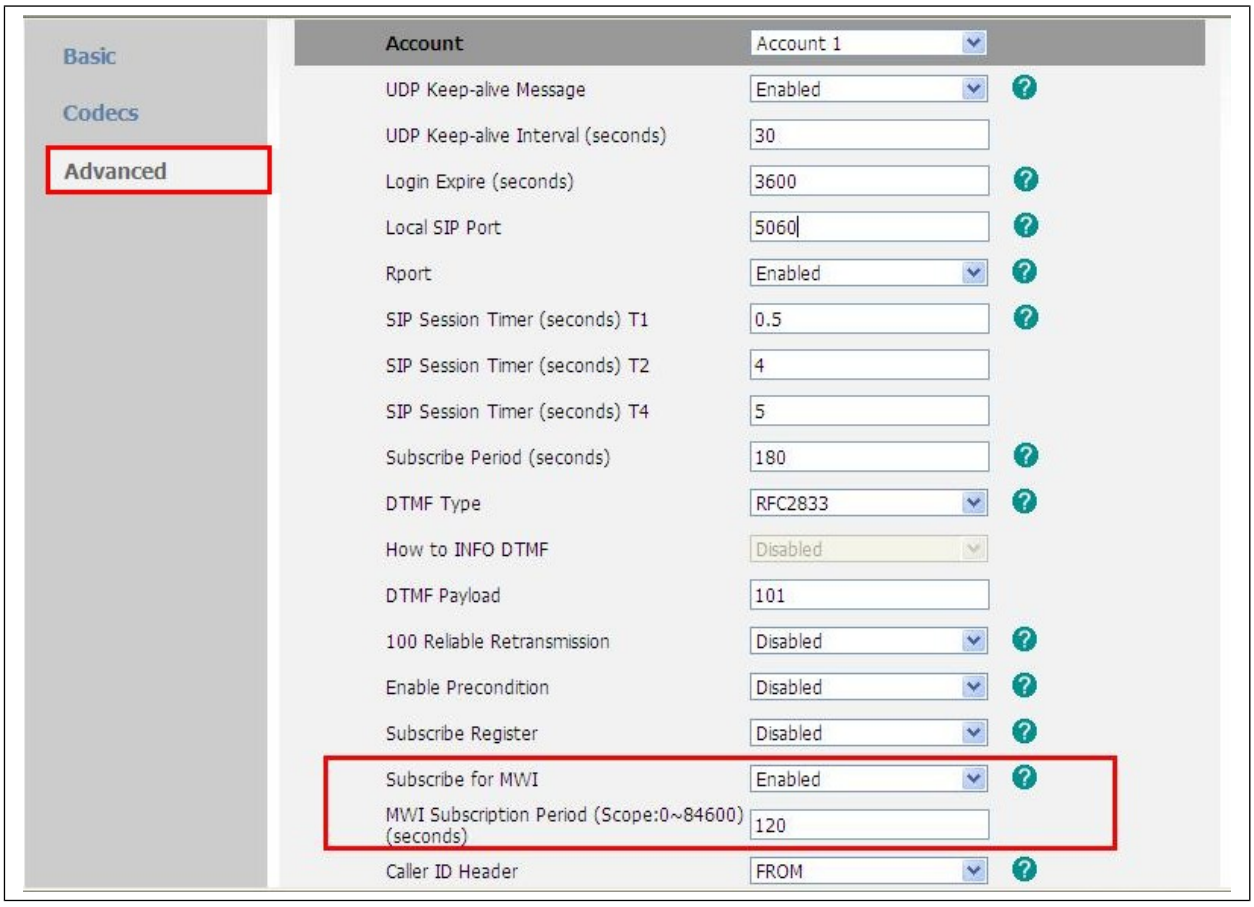
Open a web browser and enter the IP address of Yealink VP530. Enter the proper credentials and press **OK** as shown below.



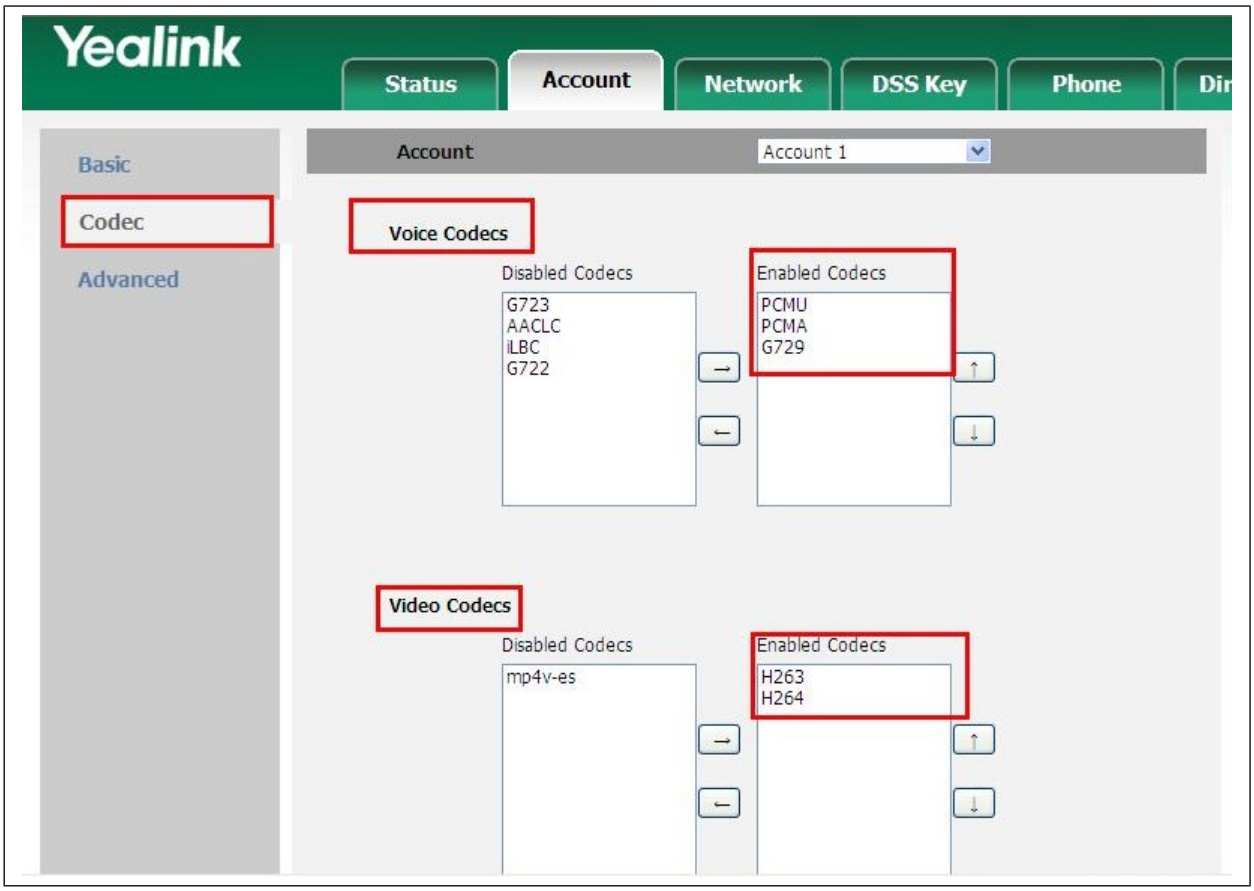
Click on the **Basic** tab in the left window. Click on the **Account** tab in the main window and enter all the credentials as shown below. Note the **SIP Server** IP address is the SM100 IP address as shown in **Section 5.4**. The **User Name** and **Password** entered is that which was created in **Section 6.3**. Click **Confirm** once all the information has been entered correctly.



Click on the **Advanced** tab in the left window and ensure the **Subscribe for MWI** is **Enabled**, and the **MWI Subscription Period** is set to **120**.



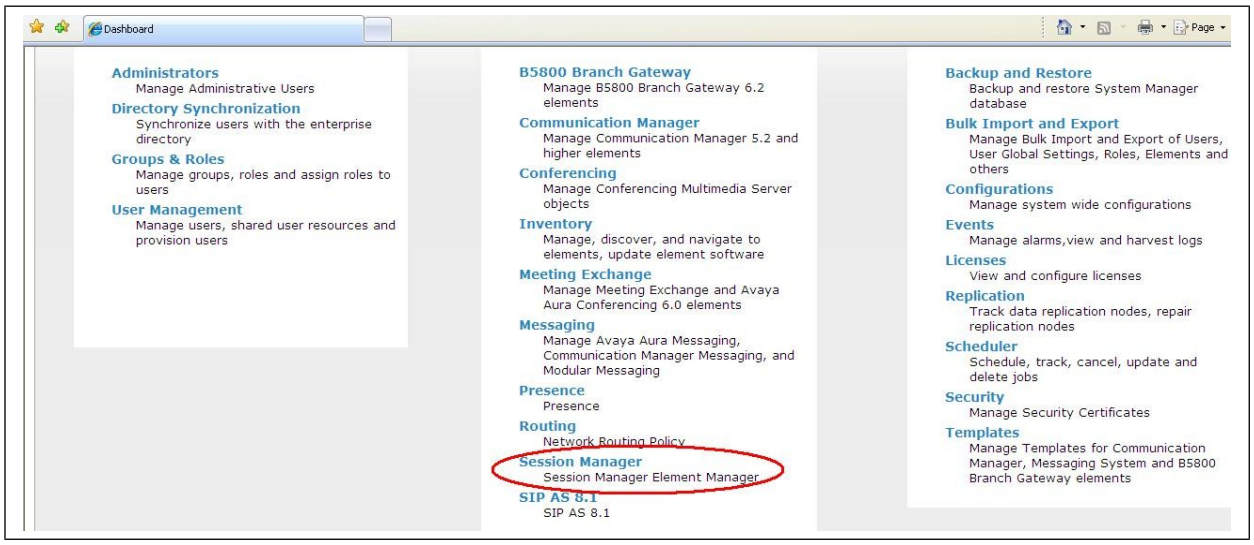
Click on the **Codec** tab in the left windows and select the necessary **Voice Codecs** and **Video Codecs** in the main window.



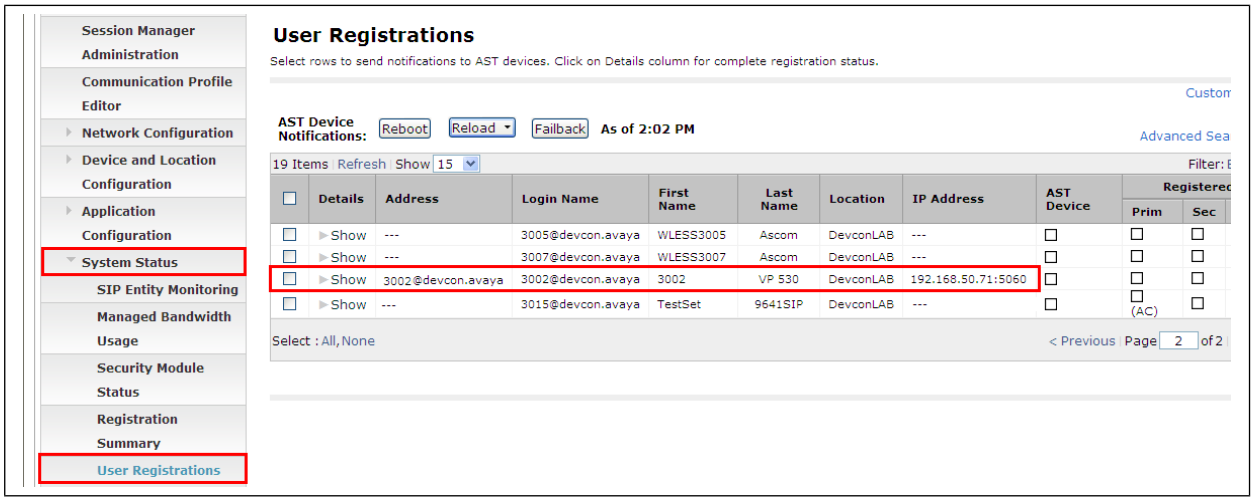
9. Verification Steps

The following steps can be taken to ensure that connection between Yealink VP530 and Session Manager are up.

Log into System Manager as done previously in **Section 6.1**, select **Session Manager** as highlighted below.



Select **System Status** and **User Registrations** in the left column. This displays the users that are currently registered with Session Manager. Yealink VP530 should show as being registered when the **Address** and the **IP Address** columns are populated with the Yealink VP530 user information as shown below.



10. Conclusion

These Application Notes describe the configuration steps required for Yealink VP530 to successfully interoperate with Avaya Aura® Communication Manager R6.2 and Avaya Aura® Session Manager R6.2 by registering Yealink VP530 with Session Manager as a third-party SIP phone. Please refer to **Section 2.2** for test results and observations.

11. Additional References

This section references documentation relevant to these Application Notes. The Avaya product documentation is available at http://support.avaya.com where the following documents can be obtained.

[1] *Administering Avaya Aura® Communication Manager,* Document ID 03-300509
[2] *Avaya Aura® Communication Manager Feature Description and Implementation,* Document ID 555-245-205
[3] *Implementing Avaya Aura® Session Manager* Document ID 03-603473
[4] *Administering Avaya Aura® Session Manager*, Doc ID 03-603324

Please refer to **Section 2.3** of these Application Notes for information on Yealink support. Product documentation can be found at www.yealink.com.

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.