Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Ascom i62 Wireless Handsets with Avaya Aura® Communication Manager R7.0 and Avaya Aura® Session Manager R7.0 – Issue 1.0

Abstract

These Application Notes describe the configuration steps for provisioning Ascom's i62 Wireless Handsets to interoperate with Avaya Aura® Communication Manager and Avaya Aura® Session Manager.

Readers should pay particular attention to the scope of testing as outlined in Section 2.1, as well as 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.

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1. Introduction

These Application Notes describe the configuration steps for provisioning Ascom's i62 wireless handsets to interoperate with Avaya Aura® Communication Manager R7.0 and Avaya Aura® Session Manager R7.0. Ascom's i62 handsets are configured to register with Avaya Aura® Session Manager and are also programmed on Avaya Aura® Communication Manager as 9620 SIP endpoints. The Ascom i62 handsets then behave as third-party SIP extensions on Avaya Aura® Communication Manager. They are able to make/receive internal and PSTN/external calls. They also have full voicemail and other telephony facilities available on Avaya Aura® Communication Manager.

2. General Test Approach and Test Results

The interoperability compliance testing evaluates the ability of Ascom i62 wireless handsets to make and receive calls to and from Avaya H.323, SIP deskphones, and PSTN endpoints. Avaya Aura® Messaging was used to allow users leave voicemail messages and to demonstrate Message Waiting Indication and DTMF on the Ascom i62 handsets.

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's formal testing and Declaration of Conformity is provided only on the headsets/Smartphones that carry the Avaya brand or logo. Avaya may conduct testing of non-Avaya headset/handset to determine interoperability with Avaya phones. However, Avaya does not conduct the testing of non-Avaya headsets/Smartphones for: Acoustic Pressure, Safety, Hearing Aid Compliance, EMC regulations, or any other tests to ensure conformity with safety, audio quality, long-term reliability or any regulation requirements. As a result, Avaya makes no representations whether a particular non-Avaya headset will work with Avaya's telephones or with a different generation of the same Avaya telephone.

Since there is no industry standard for handset interfaces, different manufacturers utilize different handset/headset interfaces with their telephones. Therefore, any claim made by a headset vendor that its product is compatible with Avaya telephones does not equate to a guarantee that the headset will provide adequate safety protection or audio quality

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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, Ascom i62 endpoints and PSTN endpoints.

- Basic Calls
- Hold and Retrieve
- Attended and Blind Transfer
- Call Forwarding Unconditional, No Reply and Busy
- Call Waiting
- Call Park/Pickup
- EC500
- Conference
- Do Not Disturb
- Calling Line Name/Identification
- Codec Support
- DTMF Support
- Message Waiting Indication

2.2. Test Results

The following observations were noted during testing.

1. TLS negotiation between the i62 handsets and Session Manager is currently not supported. All compliance testing was done using UDP and TCP as the transport protocol.
2. On one occasion, there was a “483 Loop Detected” given back to Ascom from Session Manager after a Subscribe was asked for, this could not be replicated. The issue occurred with a reboot of Session Manager and with the subsequent subscribing for notify messages when the Ascom set re-registers with Session Manager, the 483 Loop detected was sent and the Ascom handset failed to subscribe for notify messages.
3. An intermittent issue was observed with conference between Ascom sets where on occasion the handset users cannot hear each other. A calls B and B conferences in C. On some occasions A cannot hear B or C. This happens for both UDP and TCP but more often with TCP. The issue also happens with shuffling off as well as on but again very intermittently. The only way to work around this is to place the users back on hold again and then re-introduce the conference; this has worked in the lab. This points to an issue with RTP rather than with the SIP signaling.
4. There was an issue with an Ascom handset that had a SIP expiration of 3600 seconds getting notifications after the Session Manager reboot. The MWI notify was sent with a “no message” in the notify body, when indeed there was a message left. This was left overnight and a new message was presented but this time with a notify saying “Message Waiting Yes”.

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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 Ascom i62 wireless handsets can be obtained through a local Ascom supplier. Ascom global technical support:

- Email: support@ascom.se
- Help desk: +46 31 559450

3. Reference Configuration

Figure 1 shows the network topology during compliance testing. The Ascom i62 wireless handsets connect to the Ascom wireless router which is placed on the LAN. The i62 handsets register with Session Manager in order to be able to make/receive calls to and from the Avaya H.323 and SIP deskphones on Communication Manager.

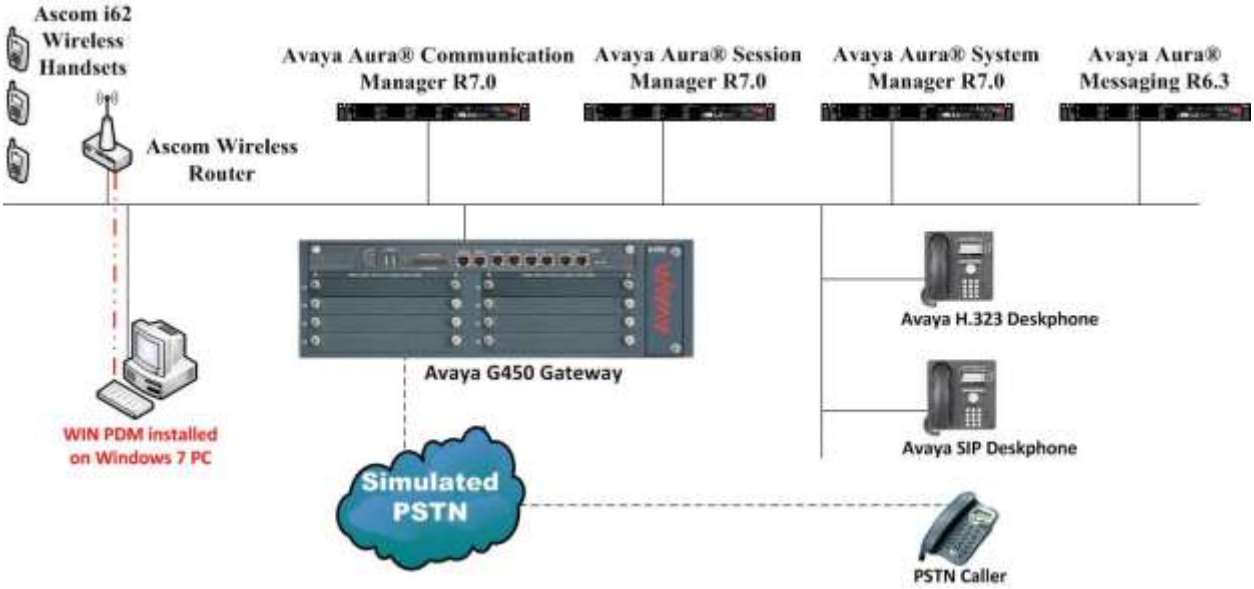

Figure 1: Network Solution of Ascom i62 Wireless Handsets with Avaya Aura® Communication Manager R7.0 and Avaya Aura® Session Manager R7.0

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4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® System Manager running on Virtual Server	R7.0.0.0.0 Build 7.0.0.0.16266-7.0.9.9.902 SW Update Revision No. 7.0.0.0.3873
Avaya Aura® Session Manager running on Virtual Server	R7.0.0.0.700007
Avaya Aura® Communication Manager running on Virtual Server	R7.0 Build 017x.00.0.441.0
Avaya Aura® Messaging running on Virtual Server	R6.3 Build No – 6.3.3
Avaya G450 Gateway	37.19.0 /1
96x1 H323 Deskphone	96x1 H323 Release 6.6.028
Avaya 9641 SIP Deskphone Avaya 9608 SIP Deskphone	96x1 SIP Release 6.5.0.17
Ascom Win PDM	3.11.1
Ascom i62 Telephone	V5.4.2

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5. Configure Avaya Aura® Communication Manager

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

- Dial Plan Analysis
- Feature Access Codes
- Network Region
- IP Codec
- Coverage Path/Hunt Group

5.1. 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 **6** and **7**. 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   udp
   3           4   udp
   4           4   udp
   5           4   udp
   5999        4   ext
   6           4   ext
   7           4   ext
   8           1   fac
   9           1   fac
   *           3   dac
   #           3   fac
```


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5.2. Configure Feature Access Codes

Use the **change feature-access-codes** command to configure access codes which can be entered from Ascom handsets to initiate Communication Manager call features. These access codes must be compatible with the dial plan described in **Section 5.1**. The following access codes need to be setup.

- **Answer Back Access Code : #21**
- **Auto Alternate Routing (AAR) Access Code : 8**
- **Auto Route Selection (ARS) - Access Code 1 : 9**
- **Call Park Access Code : #20**

```
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: #21
                         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:#31     All:#30     Deactivation:#32
   Call Forwarding Enhanced Status:        Act:        Deactivation:
                         Call Park Access Code: #20
                       Call Pickup Access Code: #22
CAS Remote Hold/Answer Hold-Unhold Access Code:
                  CDR Account Code Access Code:
                        Change COR Access Code:
                    Change Coverage Access Code:
            Conditional Call Extend Activation:        Deactivation:
                    Contact Closure   Open Code:          Close Code: CDR
Account Code Access Code:
                        Change COR Access Code:
                    Change Coverage Access Code:
            Conditional Call Extend Activation:        Deactivation:
                    Contact Closure   Open Code:          Close Code:
```


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5.3. 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 **devconnect.local** is used. Note that this domain is also configured in **Section 6.1** of these Application Notes.

```
change ip-network-region 1                                    Page   1 of  20
                              IP NETWORK REGION
  Region: 1
Location: 1       Authoritative Domain: devconnect.local
    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
```

5.4. 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 Ascom Handsets, which support both **G.711A** and **G.729A**.

```
change 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.729A            n         2        20
```


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5.5. 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 1
                                COVERAGE PATH

                   Coverage Path Number: 1
     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 that on **Page 1** the **Group Extension** is **5999,** which is the voicemail 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
```


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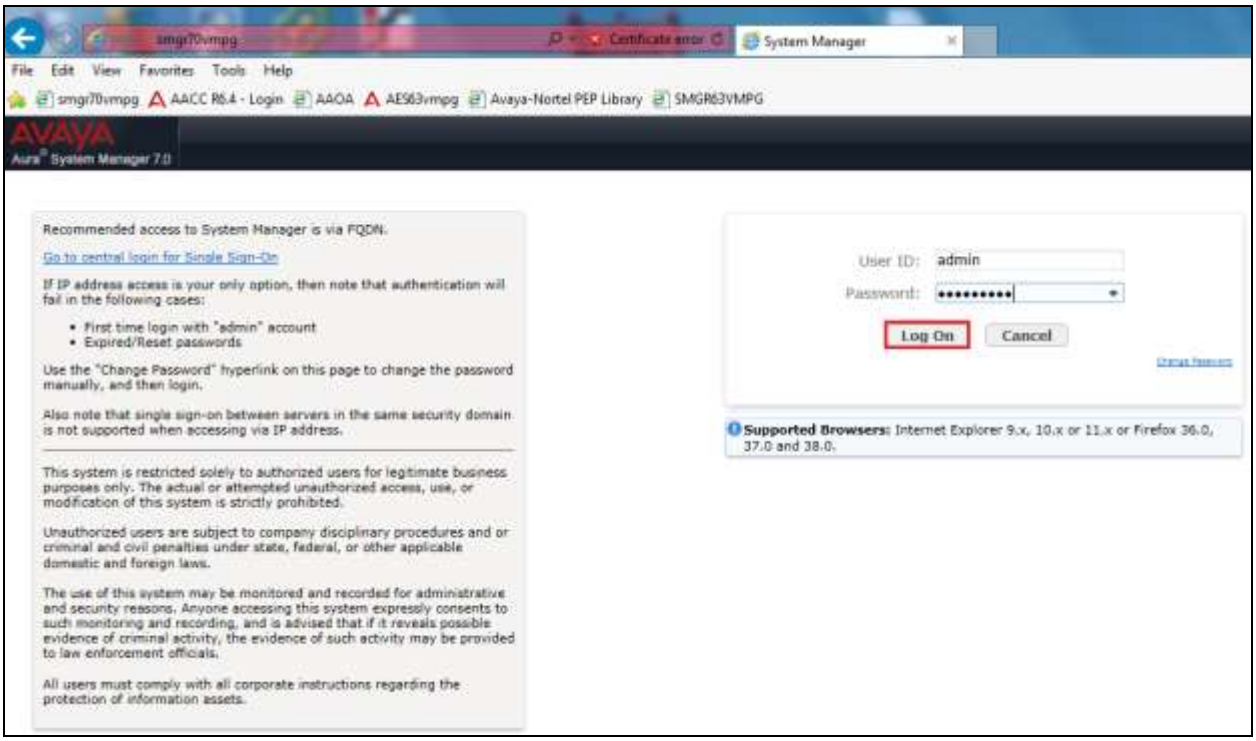
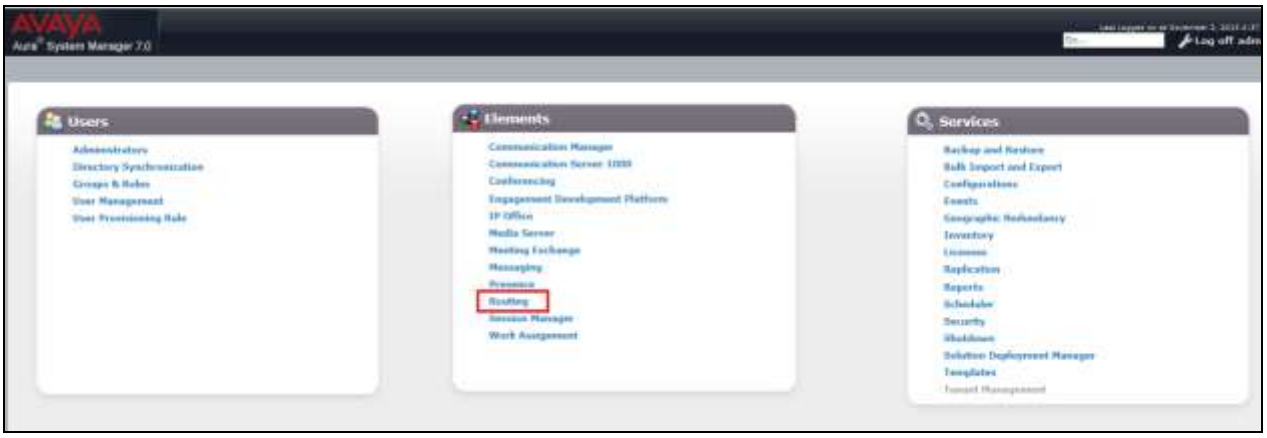
6. Configure Avaya Aura® Session Manager

The Ascom i62 handsets are added to Session Manager as SIP Users. In order make changes in Session Manager a web session to System Manager is opened. Navigate to http://<System Manager IP Address>/SMGR, enter the appropriate credentials and click on **Log On** as shown below.



6.1. Configuration of a Domain

Click on **Routing** highlighted below.



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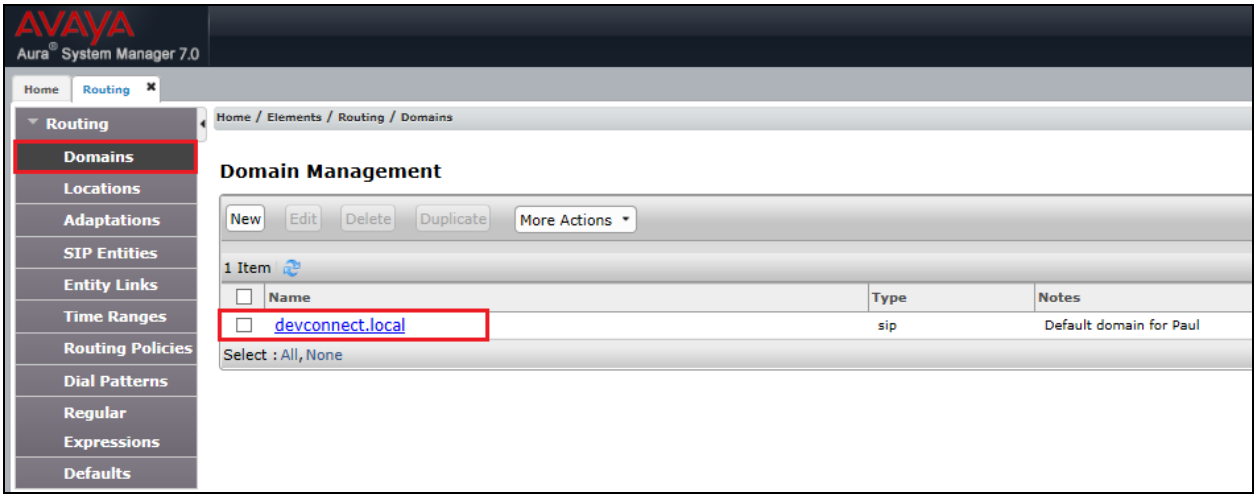
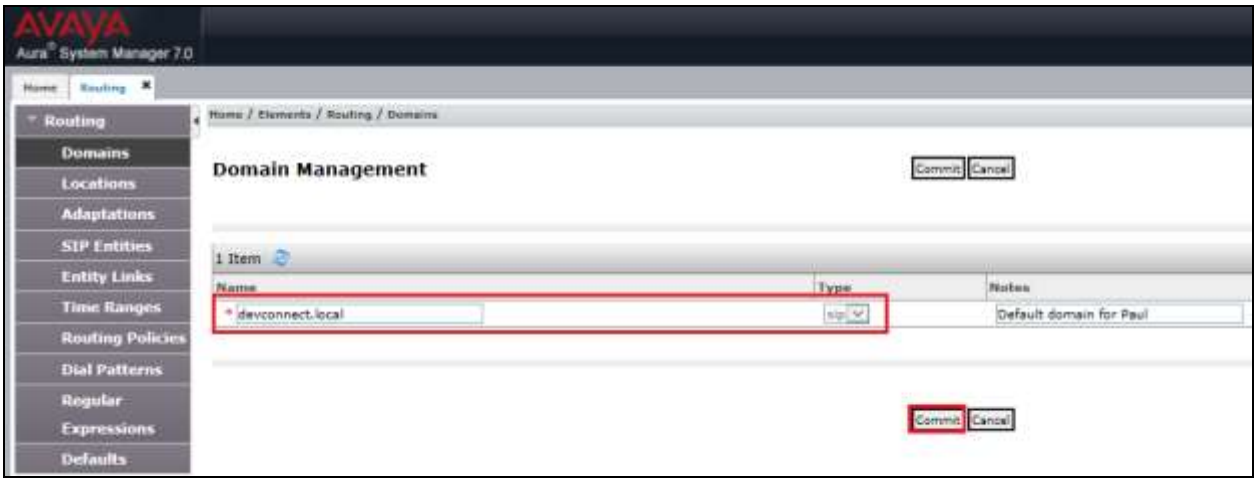
Click on **Domains** in the left window. If there is not a domain already configured click on **New** to create a new domain name with **Type sip**. In the example below, there exists a domain called devconnect.local which has been already configured.



Clicking on the domain name above will open the following window; this is simply to show an example of such a domain. When entering a new domain the following should be entered, once the domain name is entered click on **Commit** to save this.



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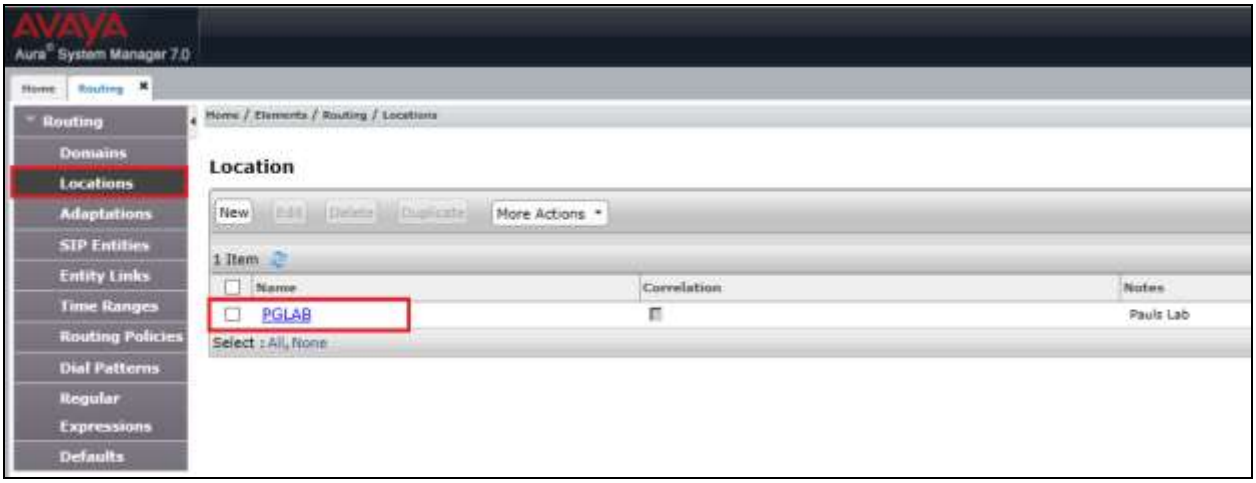
6.2. Configuration of a Location

Click on **Locations** in the left window and if there is no location already configured,then click on **New** to create a new location. However, in the screen below, a location called **PGLAB** is already setup and click into this to show its contents.



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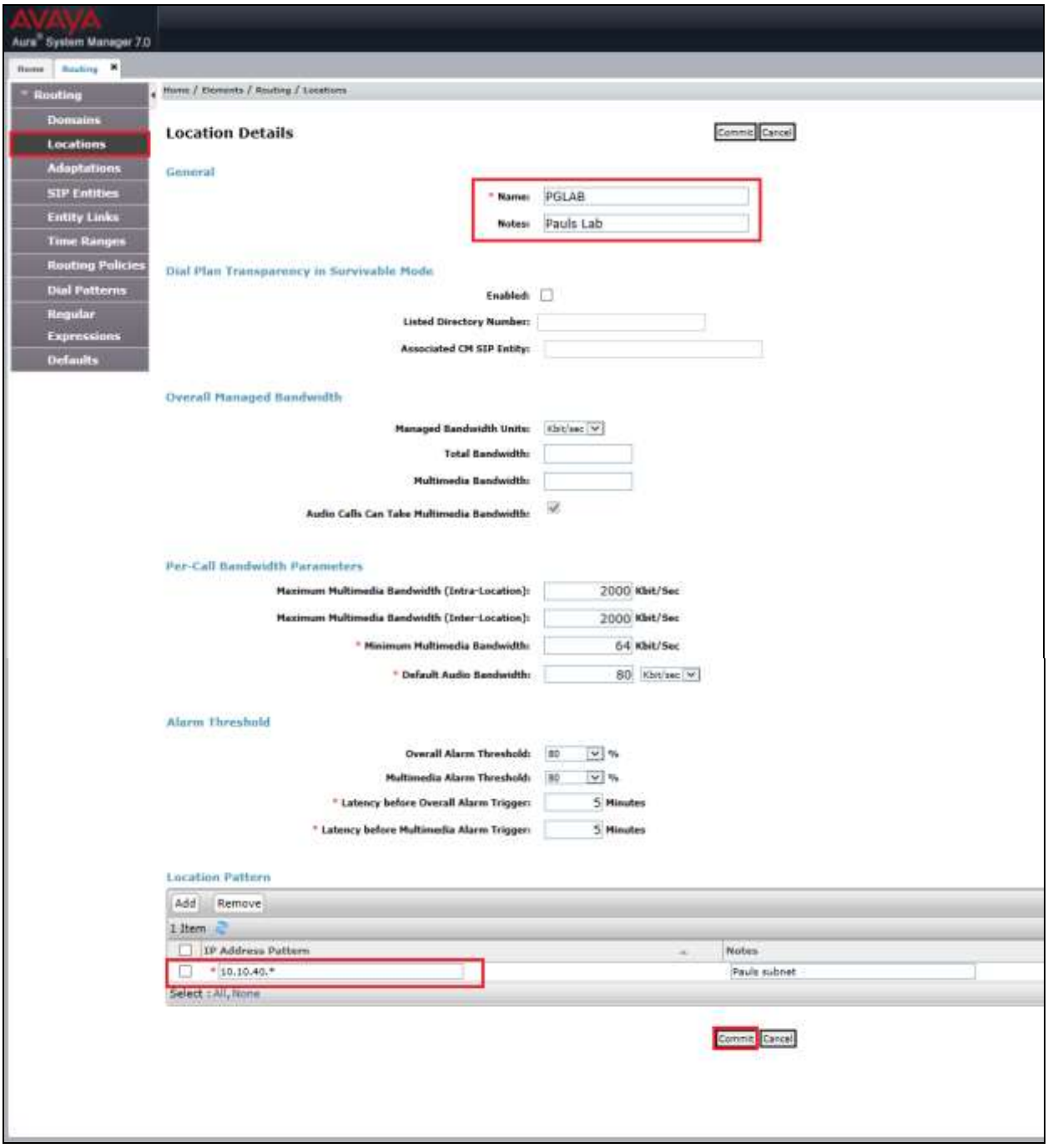
The Location below shows **Name** with **Location Pattern** of **10.10.40.***. Once this is configured, click on **Commit**.



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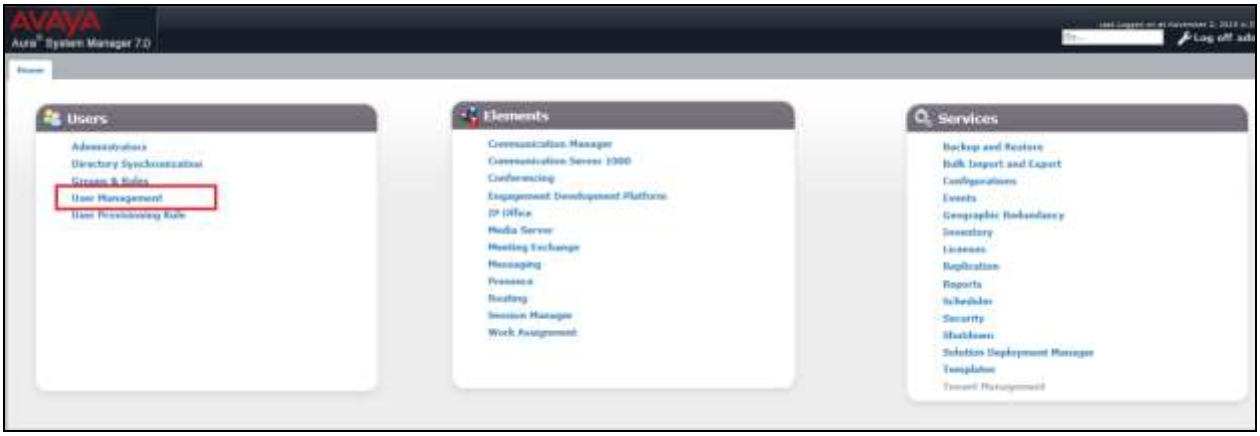
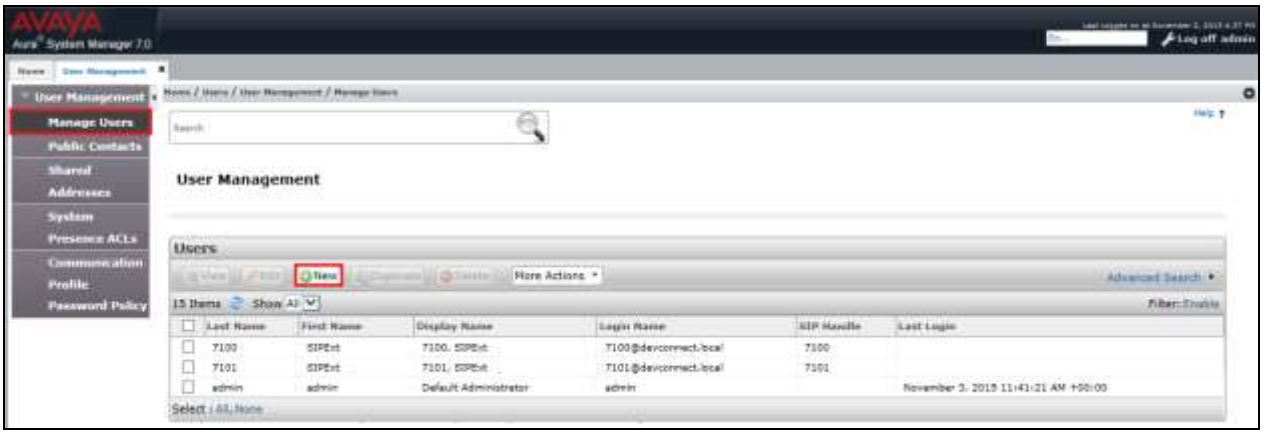
6.3. Adding Ascom SIP Users

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



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



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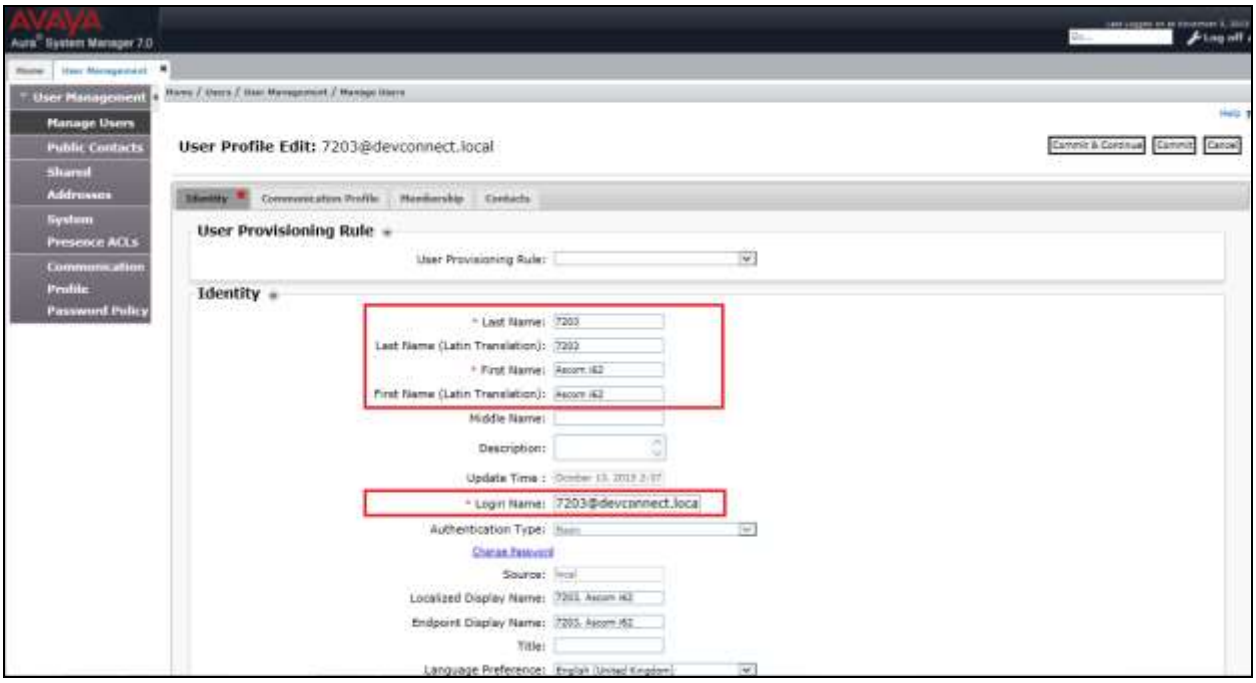
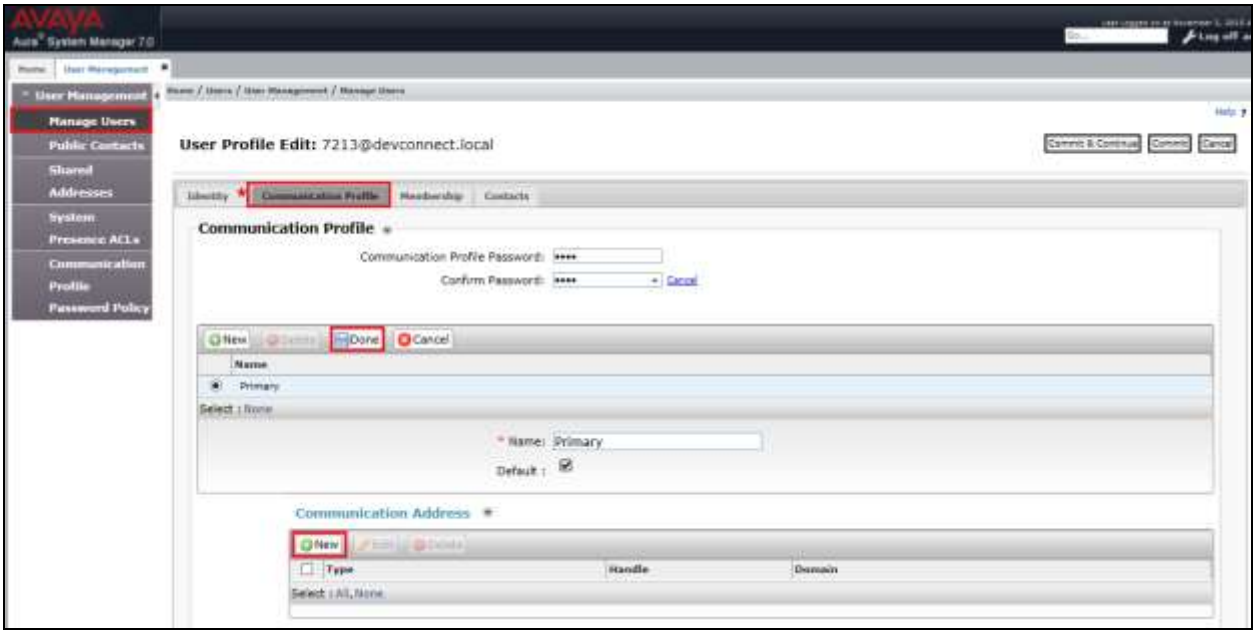
Under the **Identity** tab fill in the user's **Last Name** and **First Name** as shown below. Enter the **Login Name**. The remaining fields can be left as default.



Under the **Communication Profile** tab enter **Communication Profile Password** and click on **Done** when added, note that this password is required when configuring the Ascom handset in **Section 8.4**. Click on **New** to add a new **Communication Address**.



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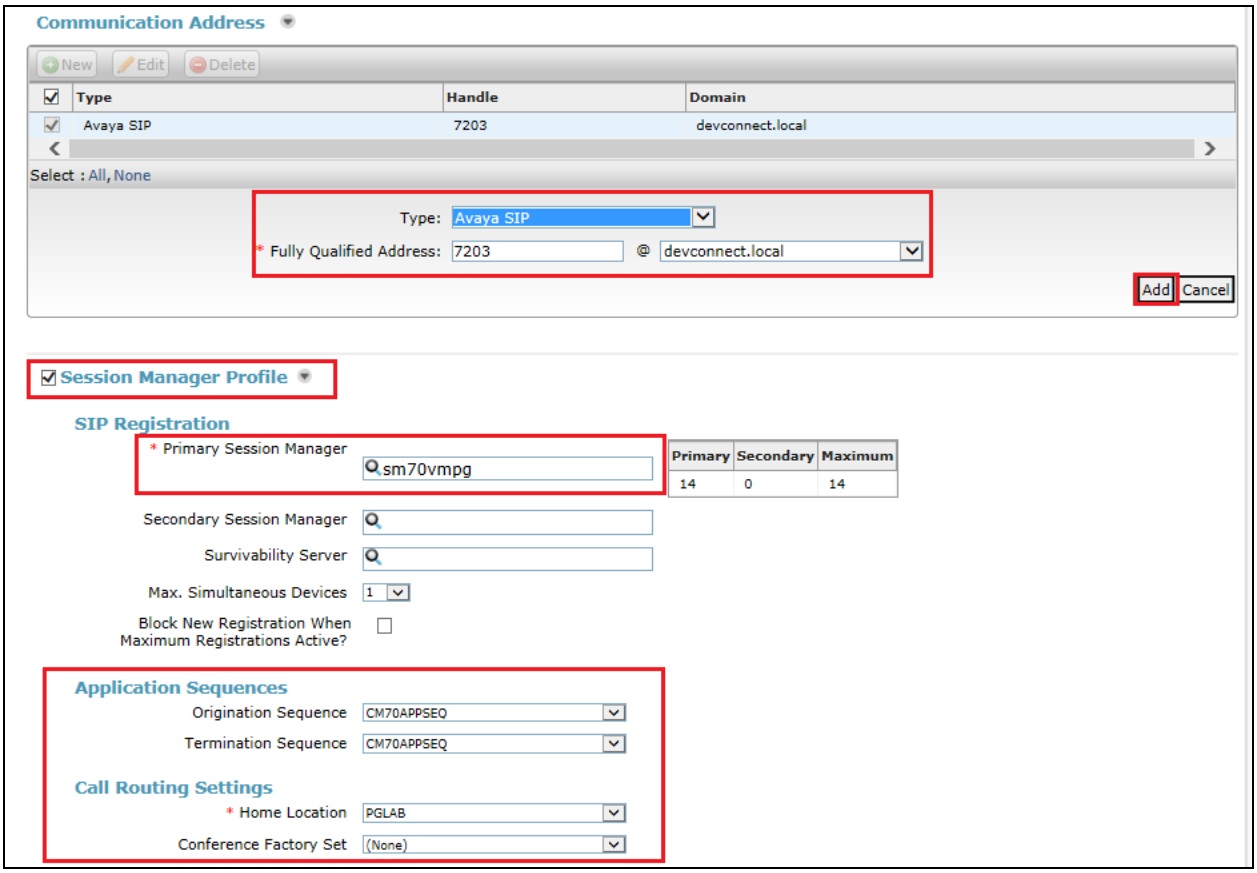
Enter the extension number and the domain for the **Fully Qualified Address** and click on **Add** once finished. Ensure **Session Manager Profile** is checked. Enter the **Primary Session Manager** details, the **Origination Application Sequence,** the **Termination Application Sequence** and the **Home Location** as highlighted below.



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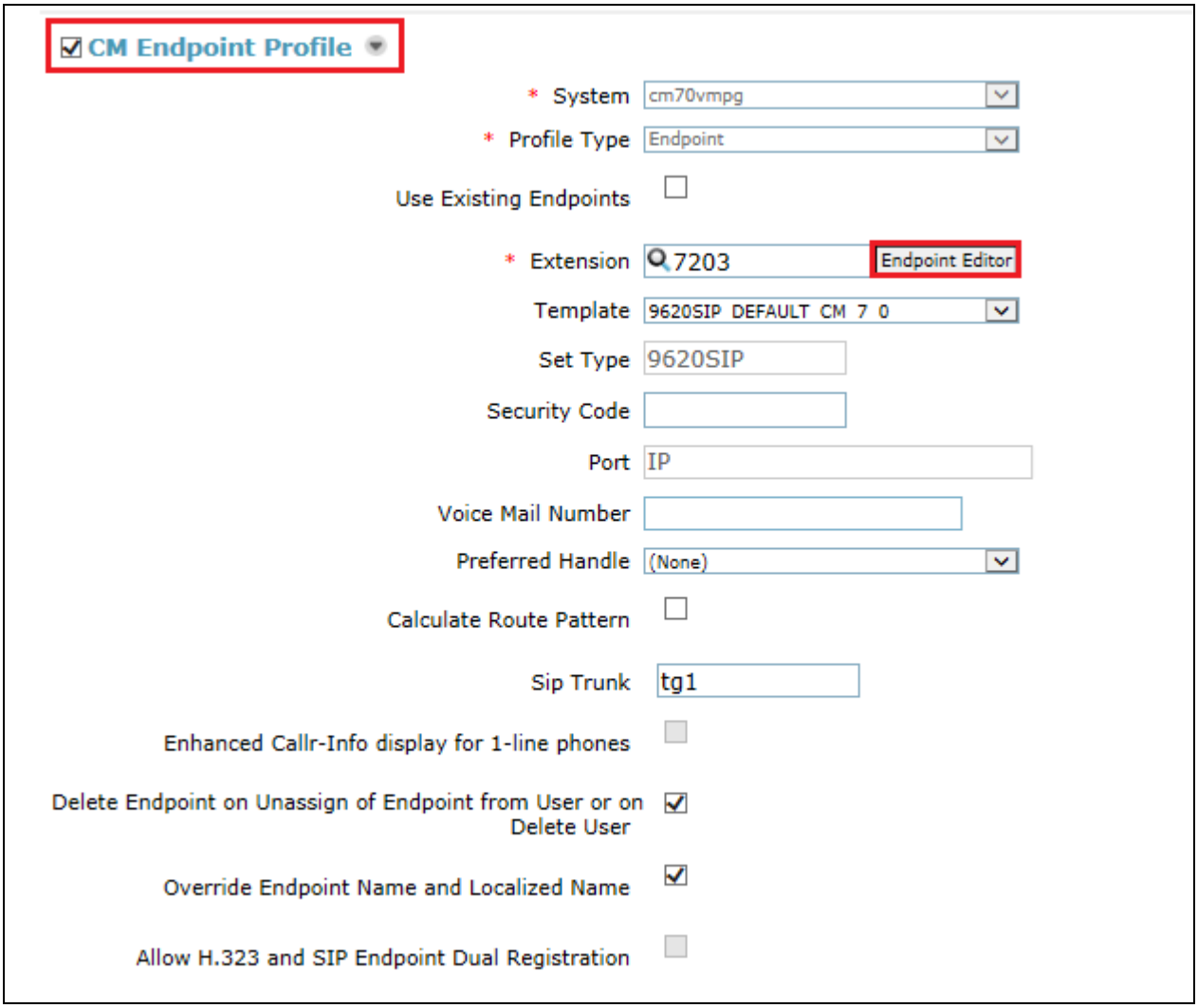
Ensure that **CM Endpoint Profile** is selected for the **System** and choose the **9620SIP_DEFAULT_CM_7_0** as the **Template**. Click on **Endpoint Editor** to configure the buttons and features for that handset on Communication Manager.



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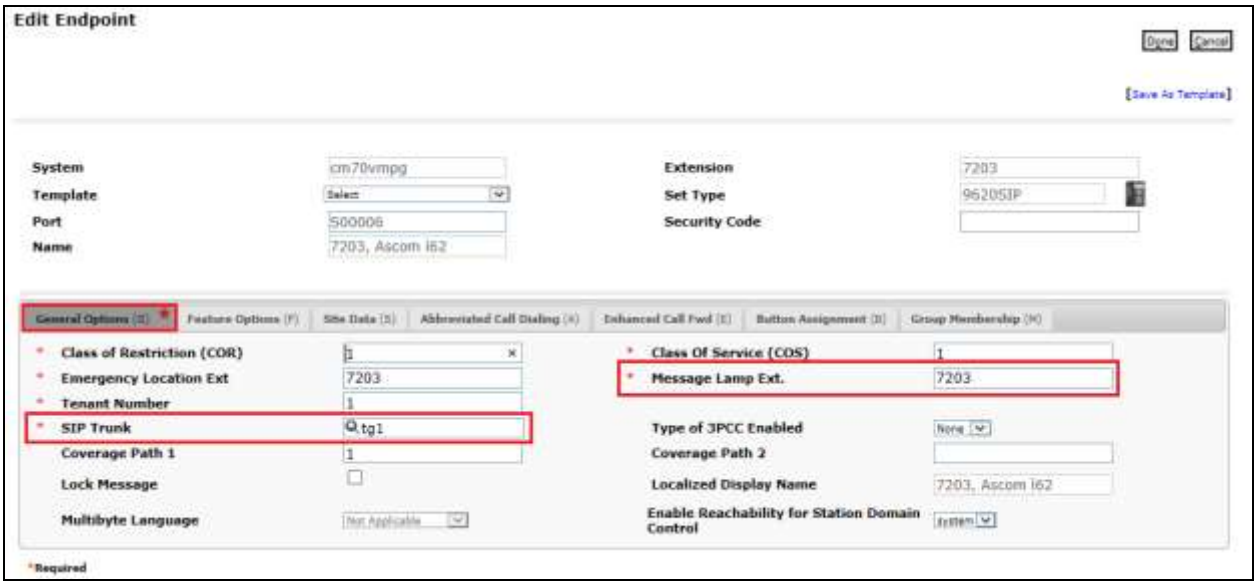
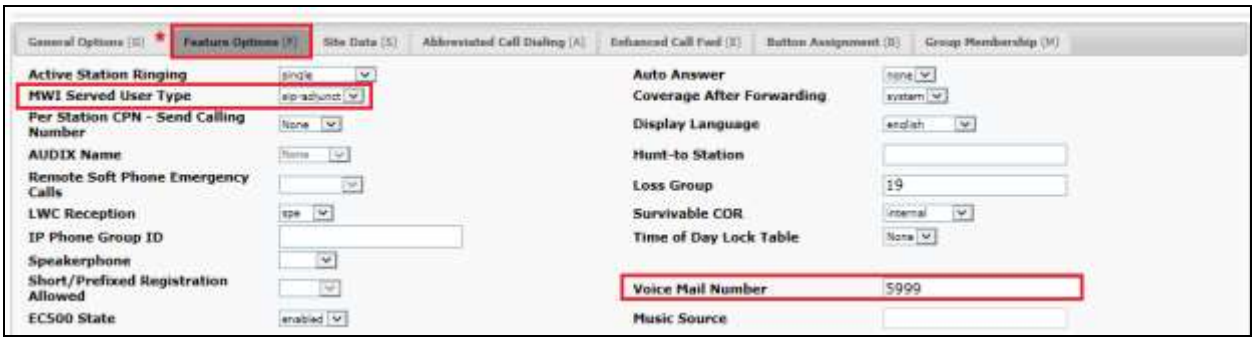
Under the **General Options** tab ensure that **Coverage Path 1** is set to that configured in **Section 5.5**. Also ensure that **Message Lamp Ext.** is showing the correct extension number.



Under the tab **Feature Options** ensure that **MWI Served User Type** is set to **sip-adjunct**. Ensure the **Voice Mail Number** is set to that configured in **Section 5.5**.



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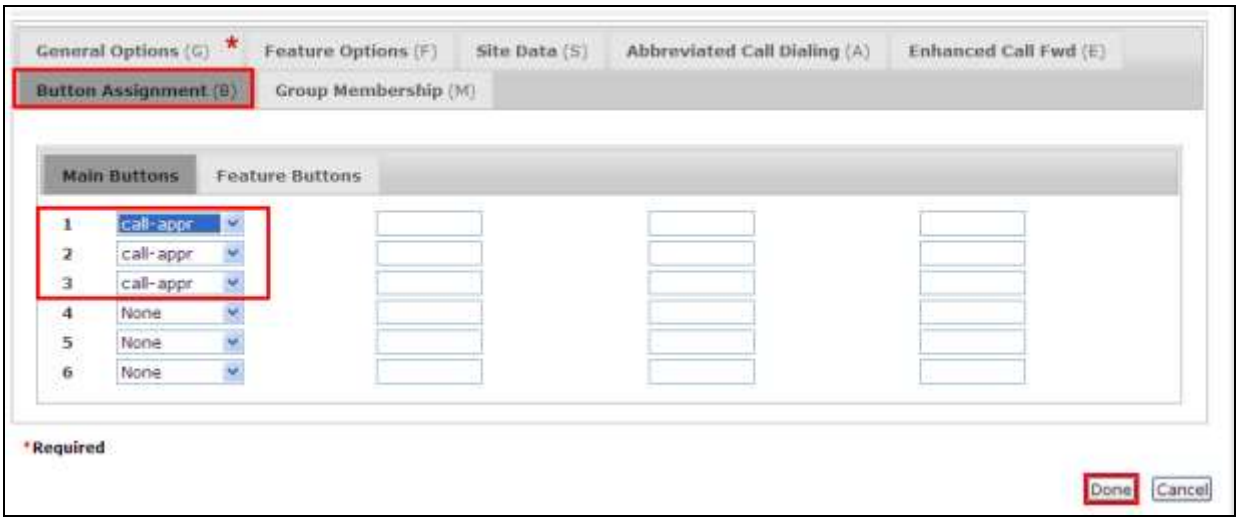
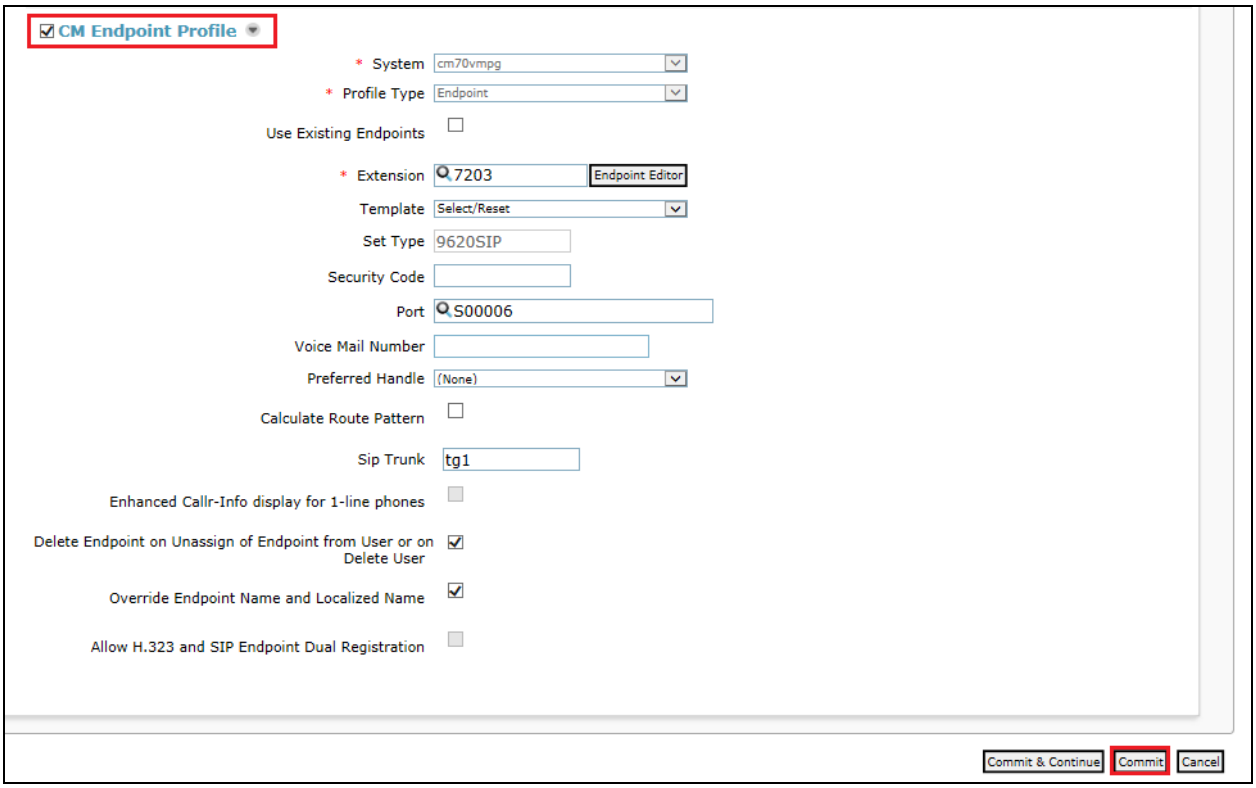
There must be 3 call appearances setup for the Ascom i62 handsets for Call Waiting to work. However the number of call appearances must be changed from 3 to 2 in order to allow the call forward when busy to work properly. Once the **Button Assignment** is completed, click on **Done** to finish.



Once the **CM Endpoint Profile** is completed correctly, click on **Commit** to save the new user.



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7. Configure Avaya Aura® Messaging

It is assumed that a fully working messaging system is in place. 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.

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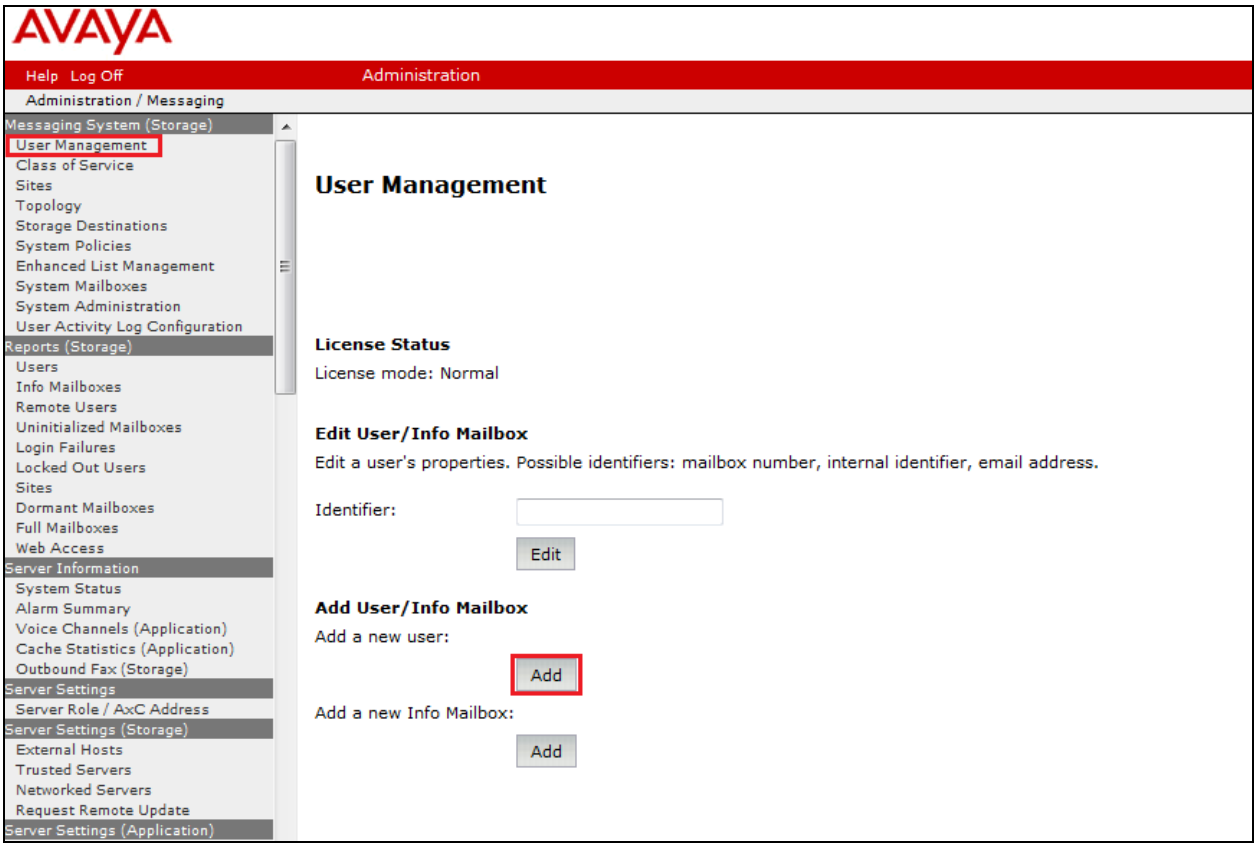
Click on **User Management** in the left hand column and click on **Add** under **Add User/Info Mailbox** as highlighted below.



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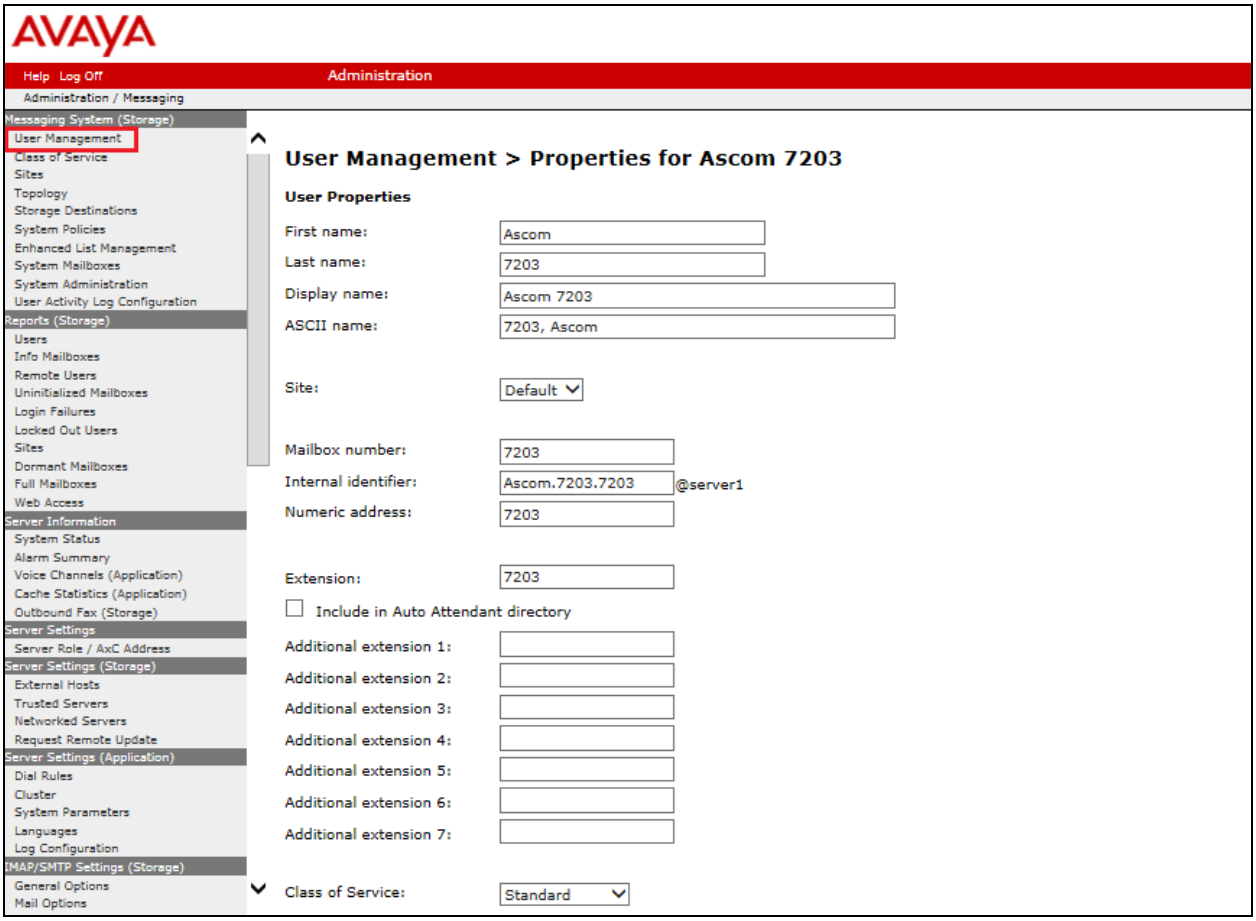
Enter a suitable **First Name** and **Last Name**. Select the appropriate **Site** from the drop down box. Enter the correct **Mailbox number** and **Extension**. The **Class of Service** should be set to **Standard**.



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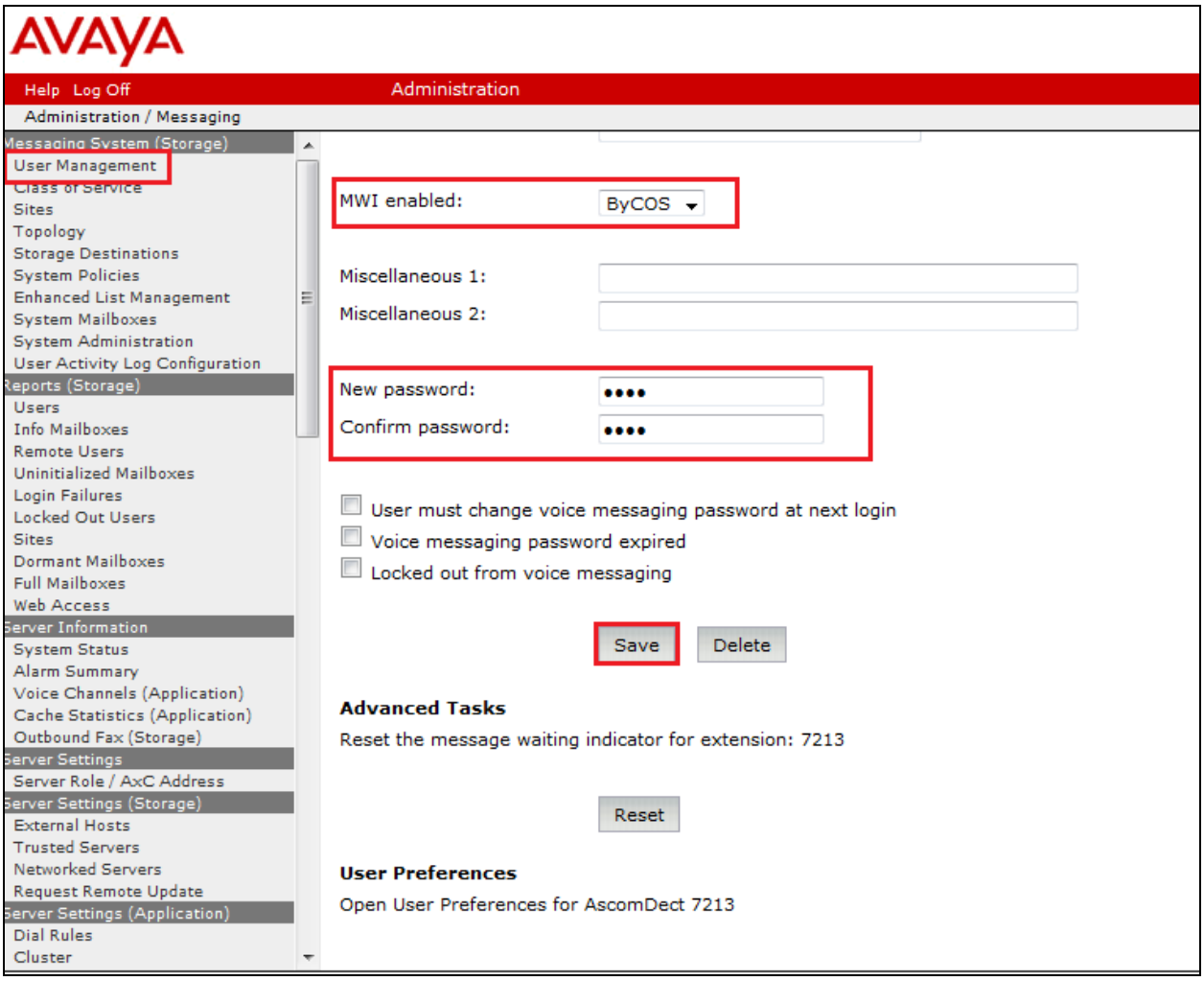
Ensure that **MWI Enabled** is set to **ByCOS**. Enter a suitable **password** and click on **Save** once finished.



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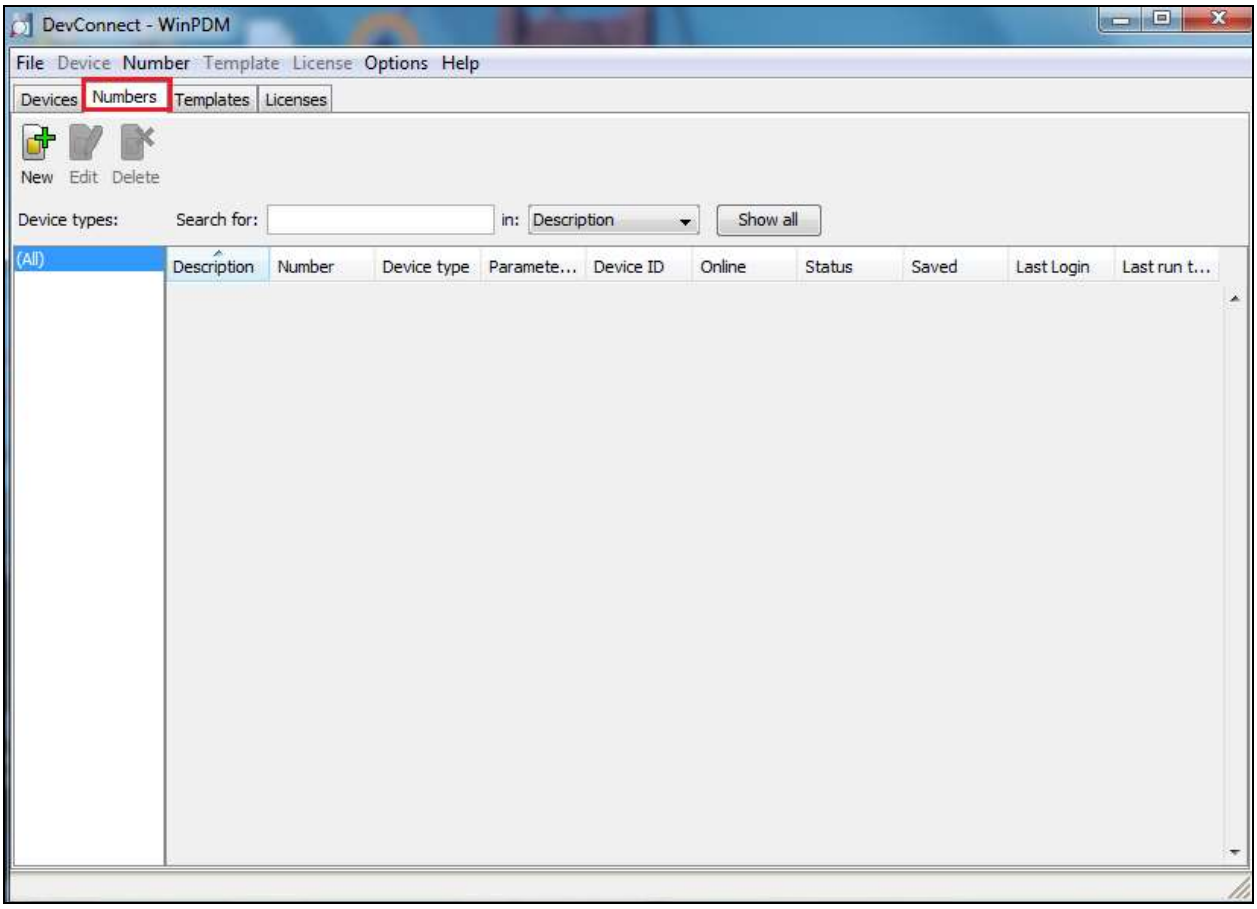
8. Configure Ascom i62 Wireless Handsets

The configuration of the i62 Wireless handsets is done using Ascom's WinPDM software installed on a PC. Attach the Ascom DP1 USB Cradle to a PC on which the Ascom Device Manager (WinPDM) has been installed. Insert the handset to be configured in the DP1 USB Cradle, start the Ascom Device Manager, select the **Numbers** tab and click **New** icon highlighted below.



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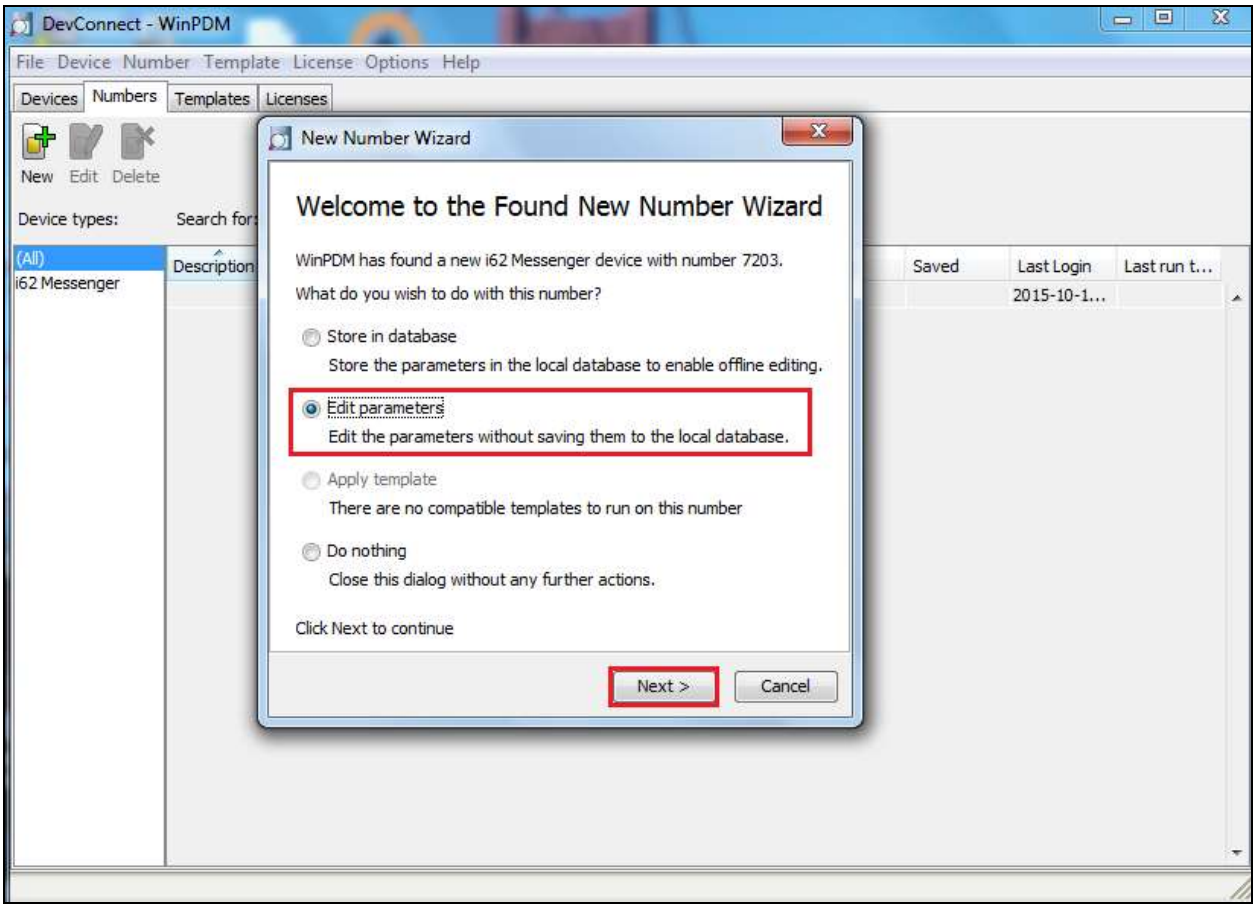
Place a new i62 to be programmed into the cradle and the following screen should appear automatically. Select **Edit parameters** and click on **Next** as shown below.



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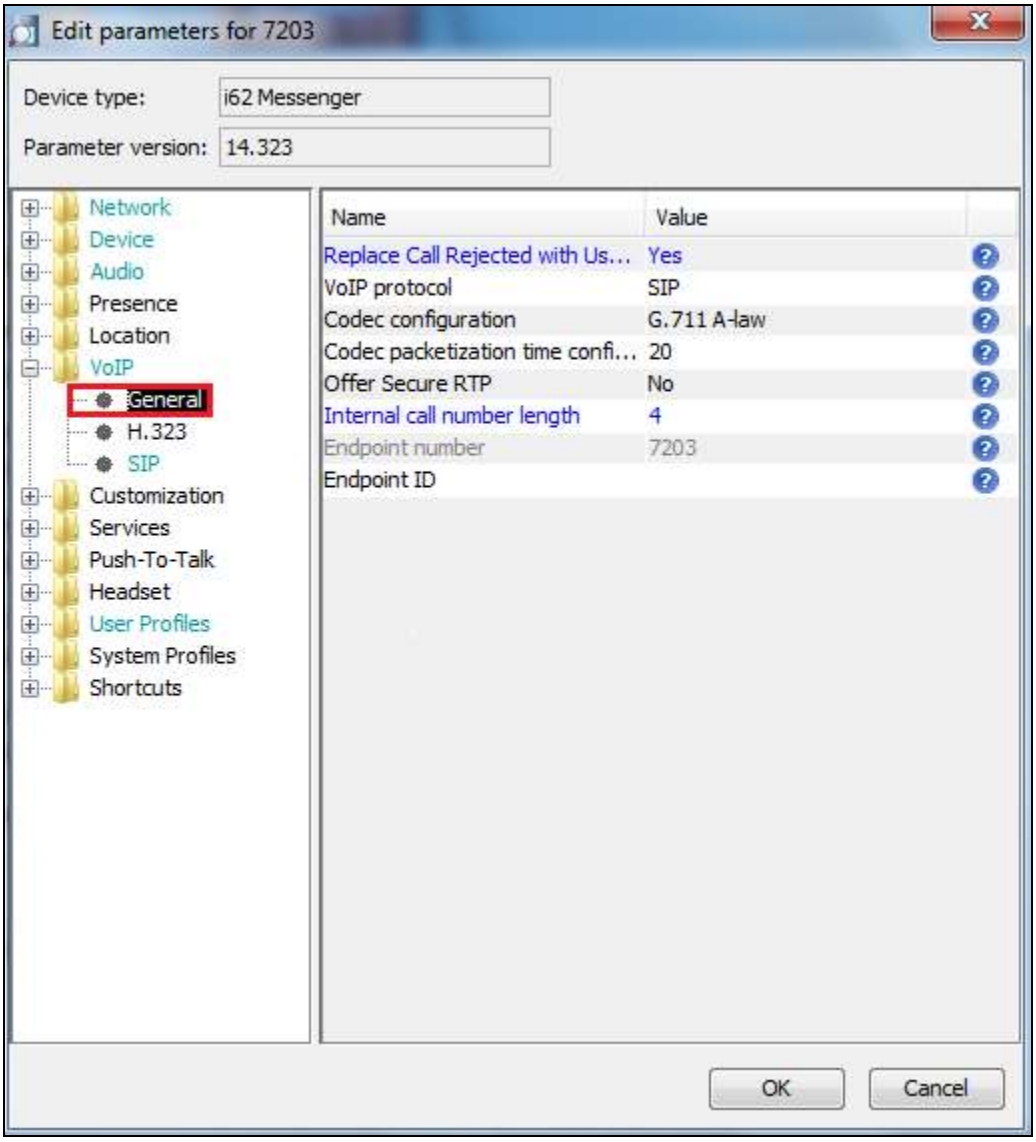
8.1. Configure SIP settings

Select **VoIP → General** from the left window. In the main window ensure the following are set.

- **Replace Call Rejected with User Busy** **Yes**
- **VoIP Protocol** **SIP**
- **Codec configuration** **G.711A-law** (as set in **Section 5.5**)
- **Codec packetization time** **20**
- **Internal call number length** **4**
- **Endpoint number** Ext number of set as set in **Section 6.3**
- **Endpoint ID** Can be left blank



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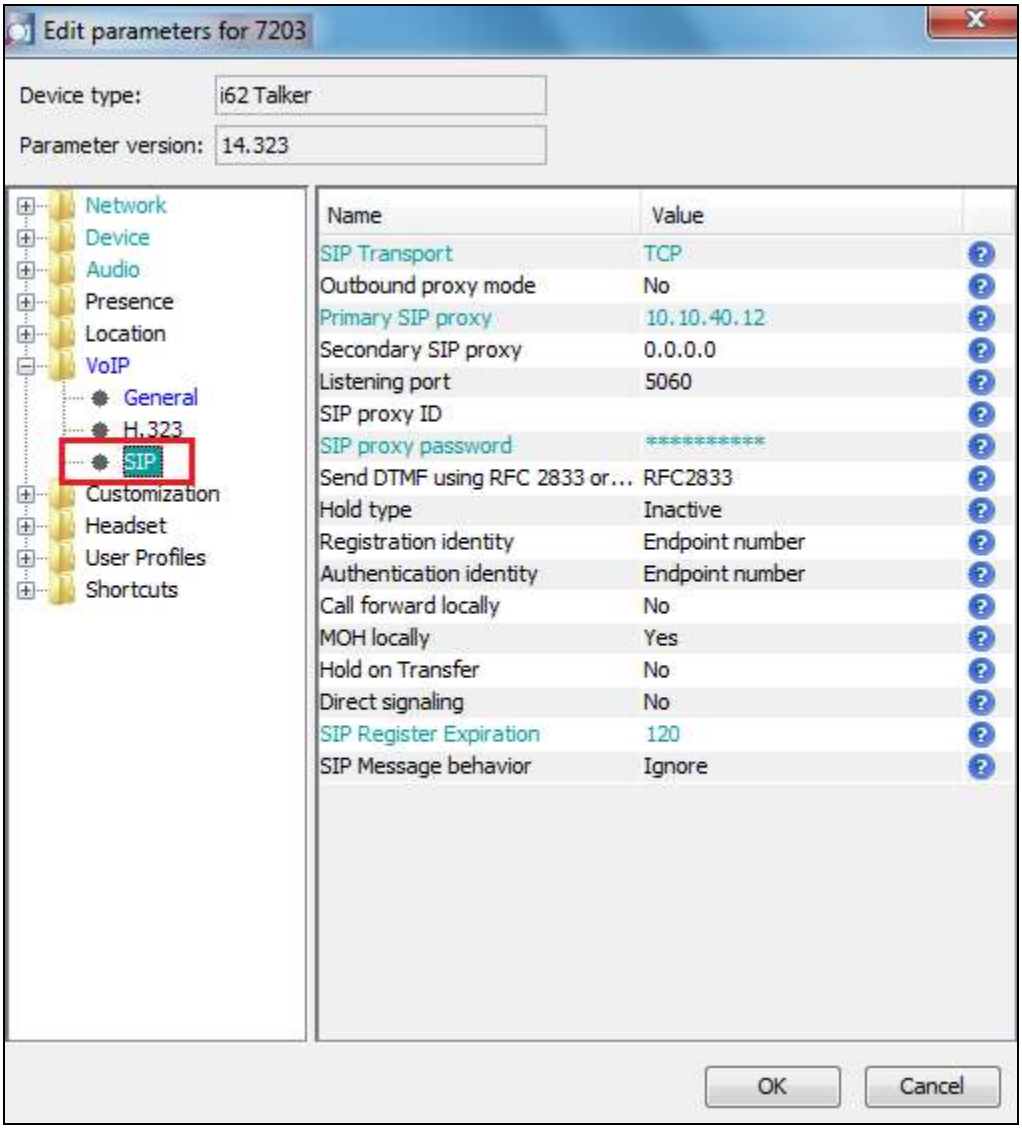
Select the **VoIP→SIP** menu point, and enter the values shown below.

- **SIP proxy IP address** IP address of Session Manager
- **Listening Port** **5060**
- **SIP proxy password** Password assigned to the endpoint in **Section 6.3**
- **Registration identity** Enter **Endpoint number**
- **Authentication identity** Enter **Endpoint number**
- **SIP Register Expiration** **120 (recommended** value)



For further information about the Ascom i62 WiFi configurations please refer to Ascom's documentation in **Section 11** of these Application Notes. This section only covers specific settings concerning SIP.

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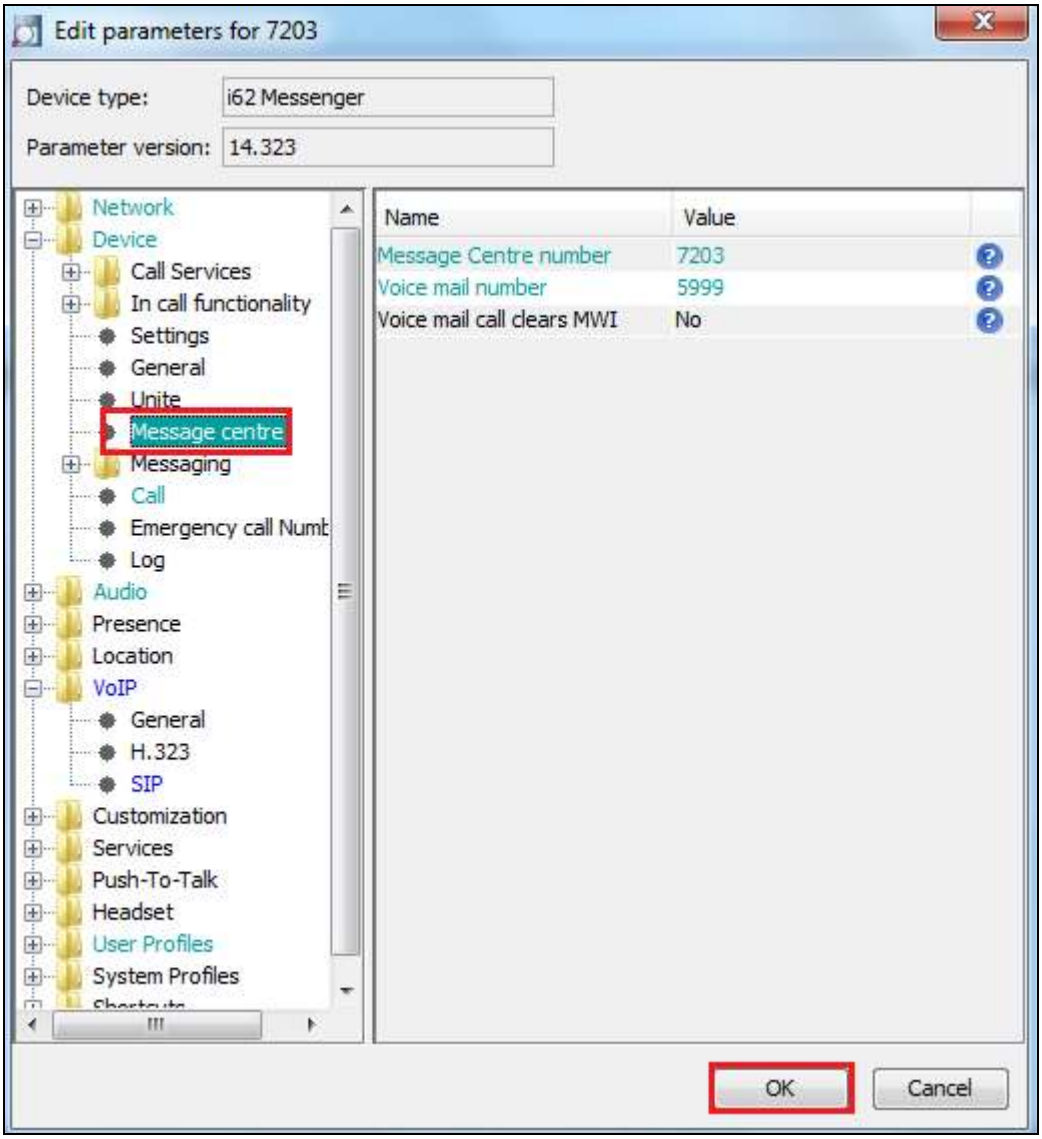
8.2. Configure Message Centre

Click on **Device → Message centre** in the left window. In the right window, enter the **Voice mail number** as configured in **Section 5.6** and the **Message Centre number** which is the extension number of the handset.



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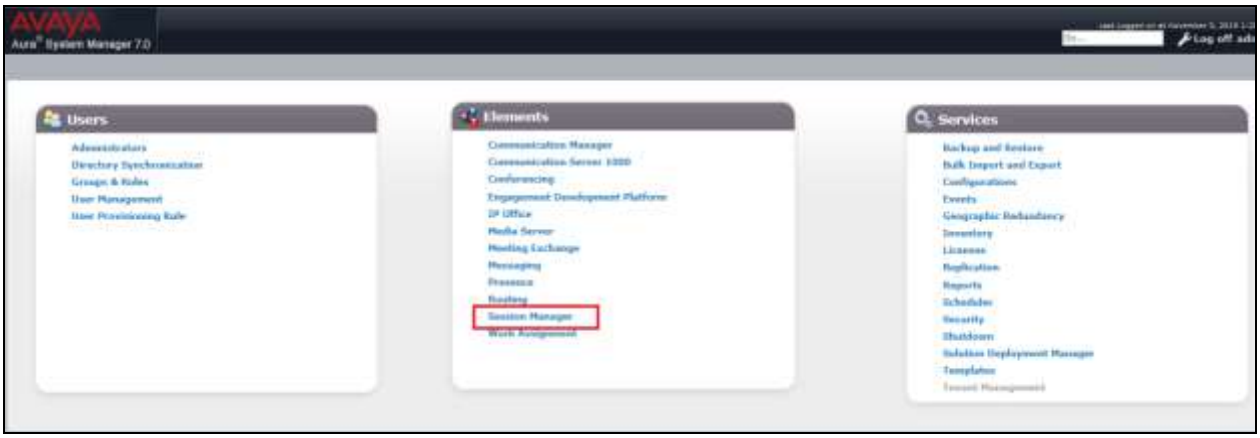
9. Verification Steps

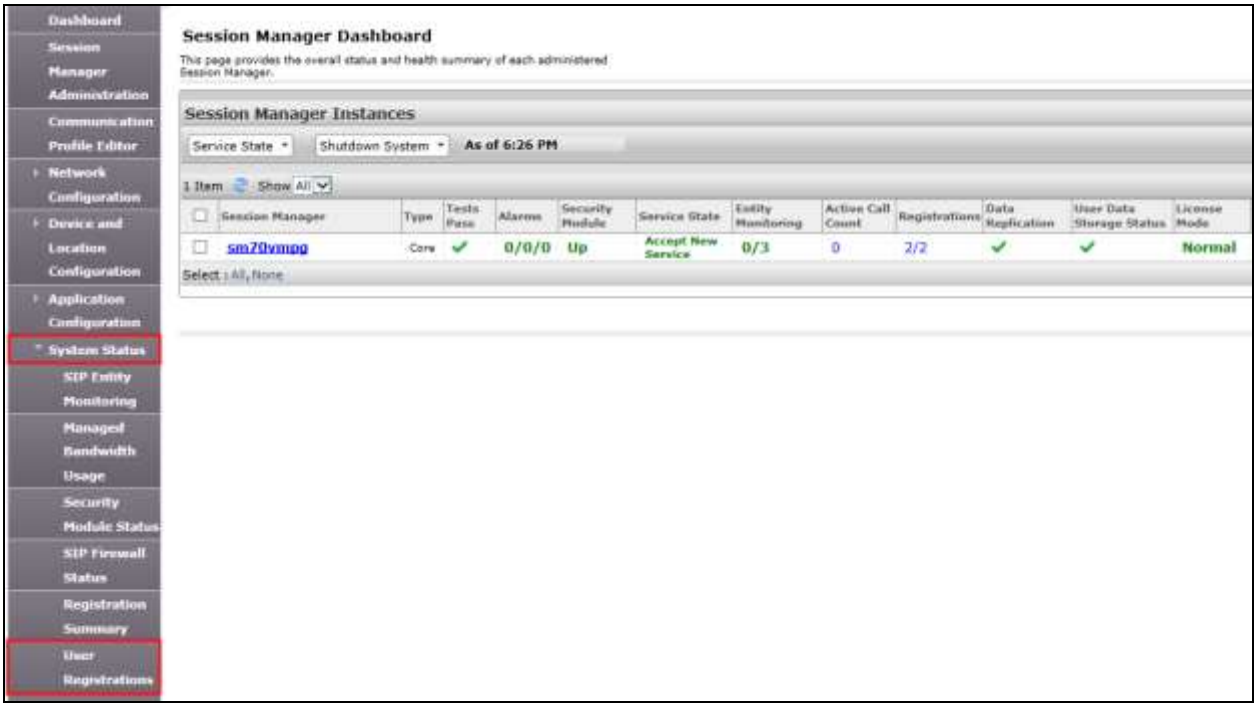
The following steps can be taken to ensure that connections between Ascom i62 handsets and Session Manager and Communication Manager are up.

9.1. Session Manager Registration

Log into System Manager as done previously in **Section 6.0**, select **Session Manager** as highlighted below.



Under **System Status** in the left window, select **User Registrations** to display all the SIP users that are currently registered with Session Manager.



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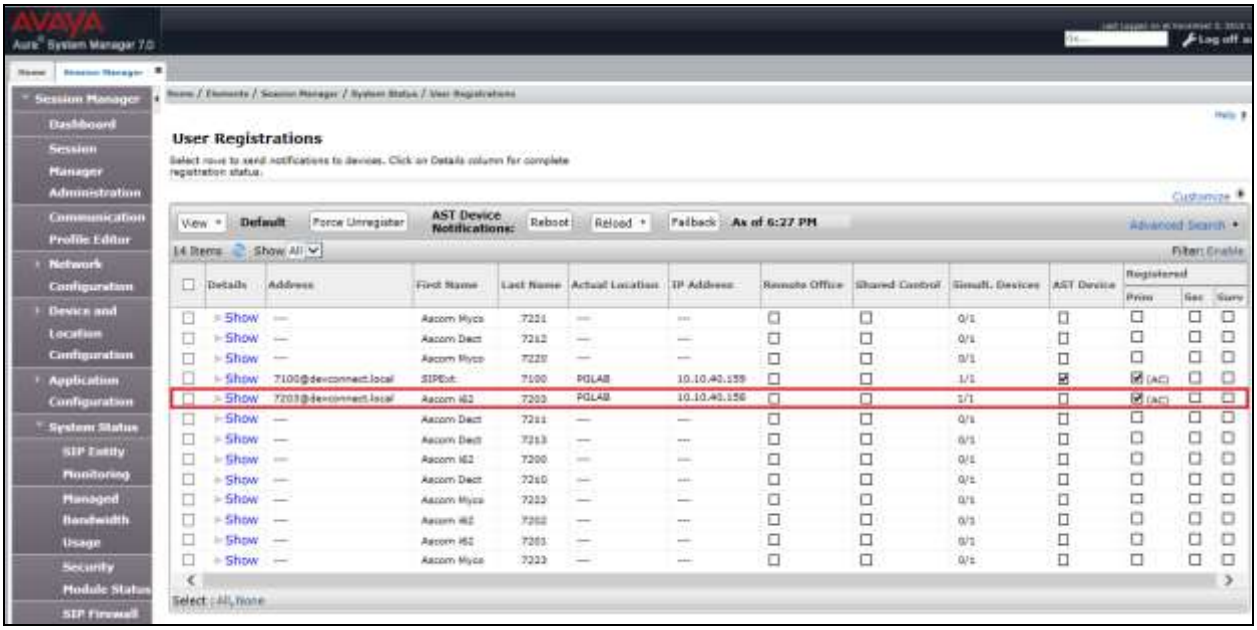
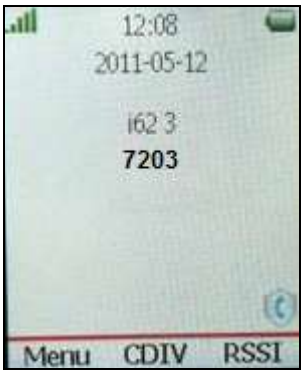
The Ascom i62 user **7203** should show as being registered as highlighted.



9.2. Ascom i62 Registration

The Ascom i62 handset connection to Session Manager can be verified by an absence of an error message on the handset display just above the red line at the bottom of the display, as shown in the following illustration, (note this is an example from compliance testing).



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10. Conclusion

These Application Notes describe the configuration steps required for Ascom's i62 Wireless Handsets to successfully interoperate with Avaya Aura® Communication Manager R7.0 and Avaya Aura® Session Manager R7.0 by registering the Ascom i62 wireless handsets with Avaya Aura® Session Manager as third-party SIP phones. 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 see below for a list of documentation used during the compliance testing information on Ascom i62 Wireless Handsets. A full list of Ascom's technical documentation is available through a local supplier. Please refer to **Section 2.3** of these Application Notes for information on Ascom support.

[5] *User Manual Ascom i62 VoWiFi Handset* (TD 92599EN)

[6] *Configuration Manual Ascom i62 VoWiFi Handset* (TD 92675EN)

[7] *System Description Ascom VoWiFi System* (TD 92313EN)

[8] *System Planning Ascom VoWiFi System* (TD 92408EN)

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