



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

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# **Application Notes for snom 3x0 VoIP Phones with Avaya IP Office – Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps required for snom 3x0 VoIP phones to interoperate with Avaya IP Office. The snom 3x0 VoIP phones are SIP-based phones that integrate with Avaya IP Office as SIP endpoints.

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 snom 3x0 VoIP phones to interoperate with Avaya IP Office. The snom 3x0 VoIP phones are SIP-based phones that integrate with Avaya IP Office as SIP endpoints.

In the compliance testing, the snom 370 VoIP phone was used.

## 1.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing included registration, basic call, display, hold/reconnect, conference, media shuffling, G.711, G.729, G.723, MWI, DTMF, do not disturb and call forwarding unconditional short code scenarios.

The serviceability testing focused on verifying the ability of snom 370 to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet cable to the device.

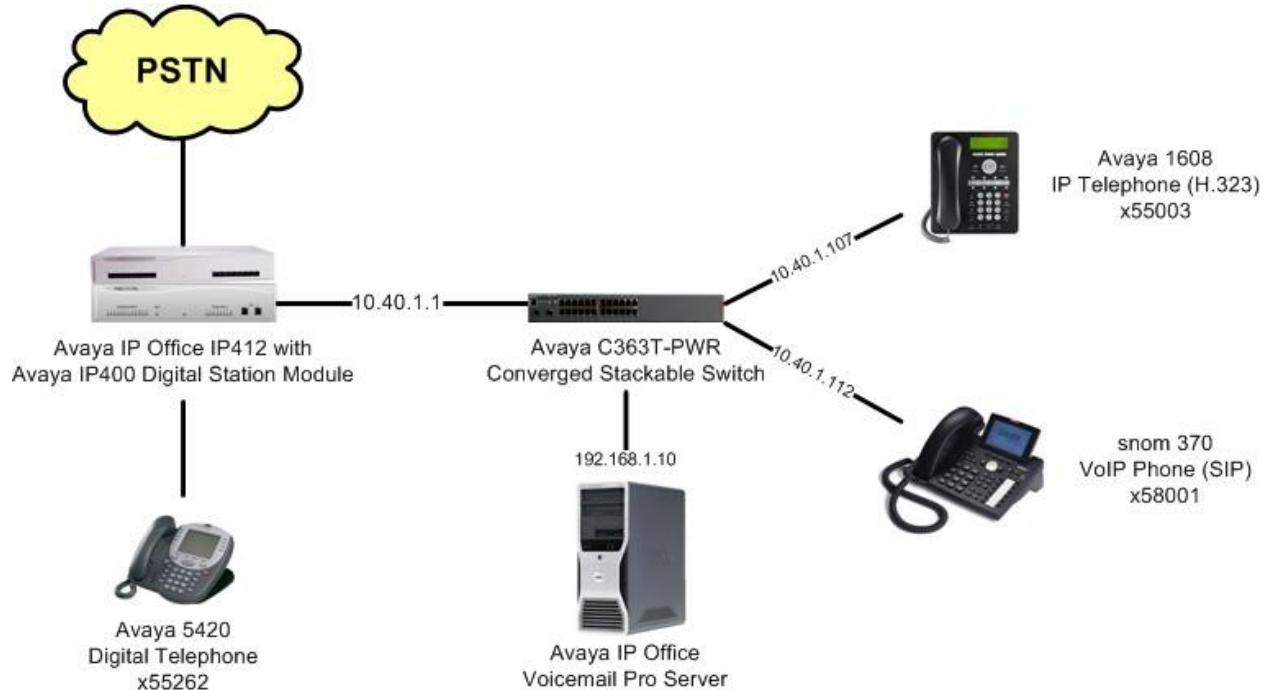
## 1.2. Support

Technical support on snom 370 can be obtained through the following:

- **Phone:** (978) 998-7882
- **Web:** <http://www.snom.com>

## 2. Reference Configuration

**Figure 1** below shows the configuration used for the compliance testing. The Avaya IP Office Voicemail Pro was used to provide voicemail functionality.



**Figure 1: snom 370 with Avaya IP Office**

## 3. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office IP412	5.0 (4)
Avaya 1608 IP Telephone (H.323)	1.21
Avaya 5420 Digital Telephone	NA
snom 370 VoIP Phone (SIP)	7.3.23

## 4. Configure Avaya IP Office

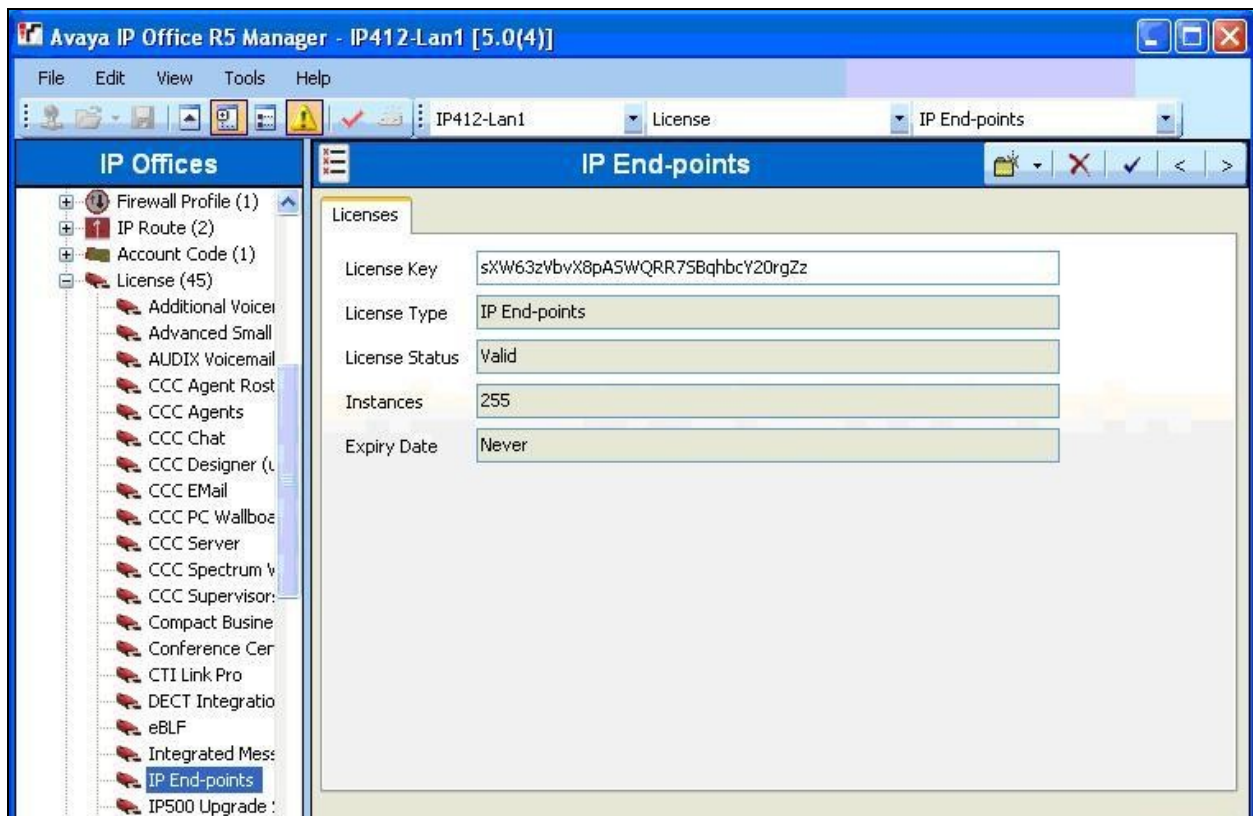
This section provides the procedures for configuring Avaya IP Office. The procedures include the following areas:

- Verify IP Office license
- Obtain LAN IP address
- Administer SIP registrar
- Administer SIP extensions
- Administer SIP users

### 4.1. Verify IP Office License

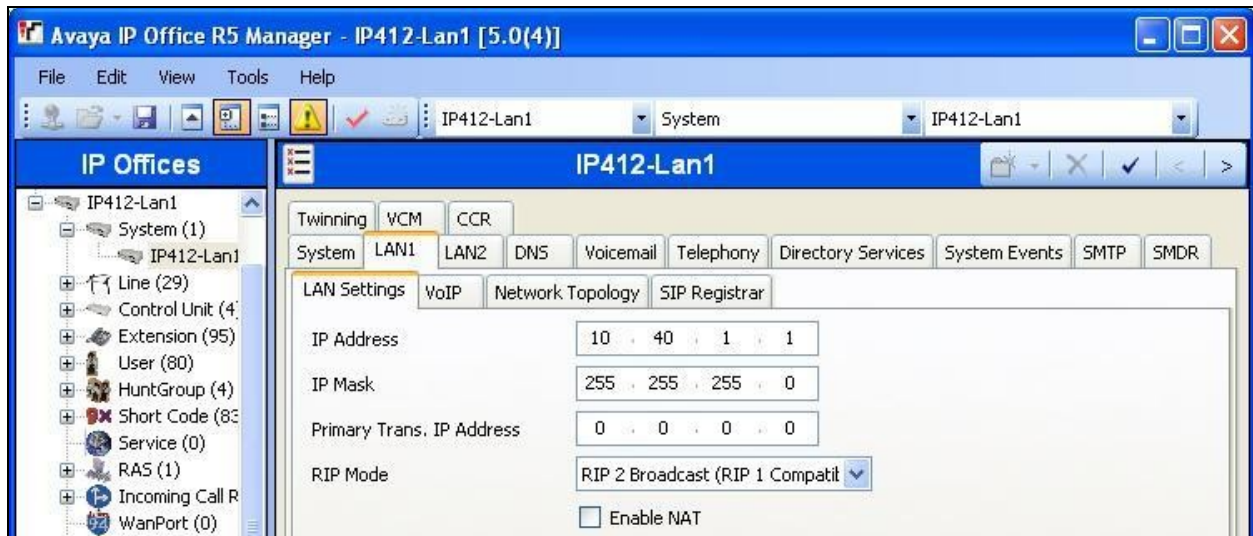
From a PC running the Avaya IP Office Manager application, select **Start > Programs > IP Office > Manager** to launch the Manager application. Select the proper IP Office system, and log in with the appropriate credentials.

The **Avaya IP Office Manager** screen is displayed. From the configuration tree in the left pane, select **License > IP End-points** to display the **IP End-points** screen in the right pane. Verify that the **License Status** is “Valid”.



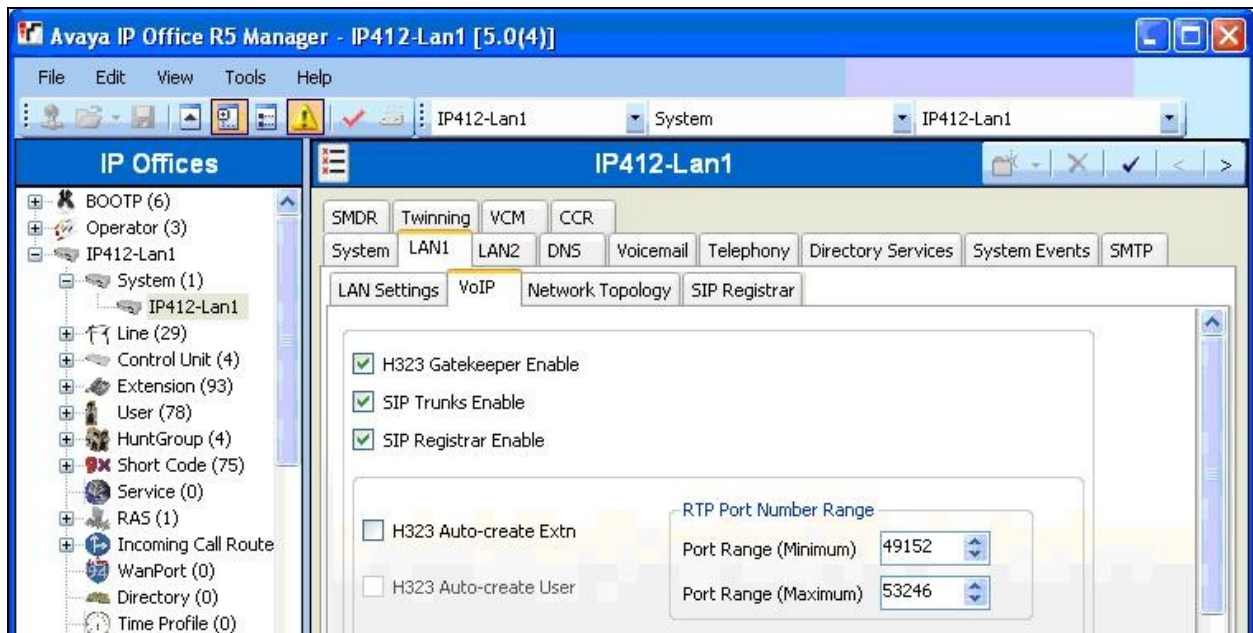
## 4.2. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the **IP412-Lan1** screen in the right pane. Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane. Make a note of the **IP Address**, which will be used later to configure snom. Note that IP Office can support SIP extensions on the LAN1 and/or LAN2 interfaces, and the compliance testing used the LAN1 interface.

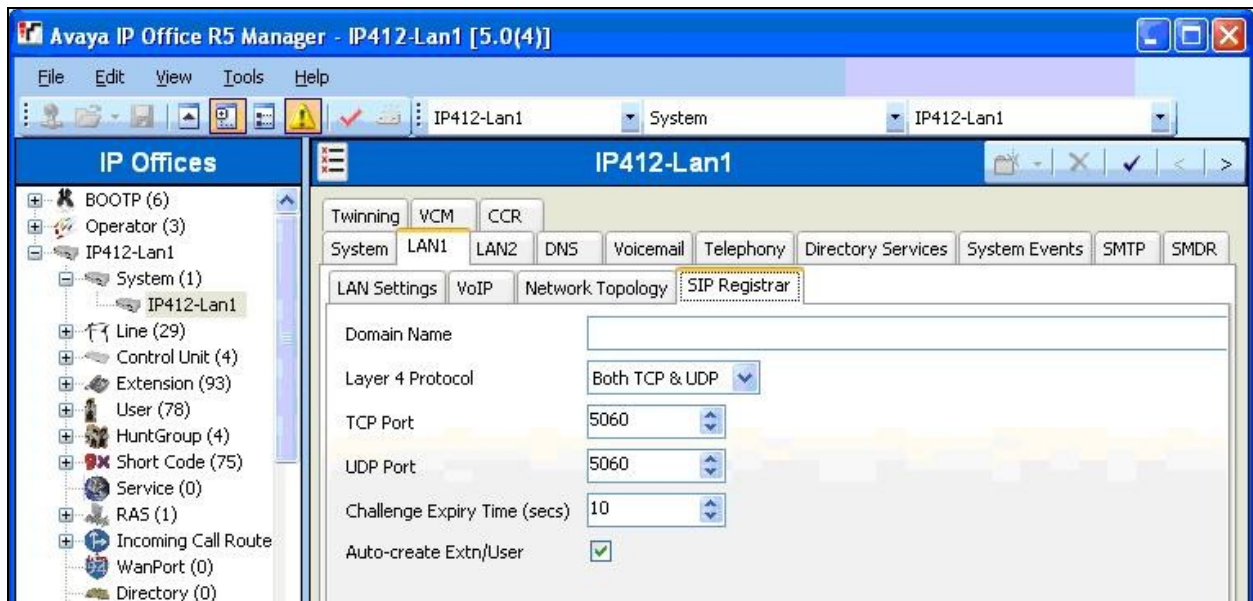


### 4.3. Administer SIP Registrar

Select the **VoIP** sub-tab. Make certain that **SIP Registrar Enable** is checked, as shown below.



Select the **SIP Registrar** sub-tab, and enter a valid **Domain Name** for SIP endpoints to use for registration with IP Office. In the compliance testing, the **Domain Name** was left blank, so the SIP endpoints used the LAN IP address for registration.





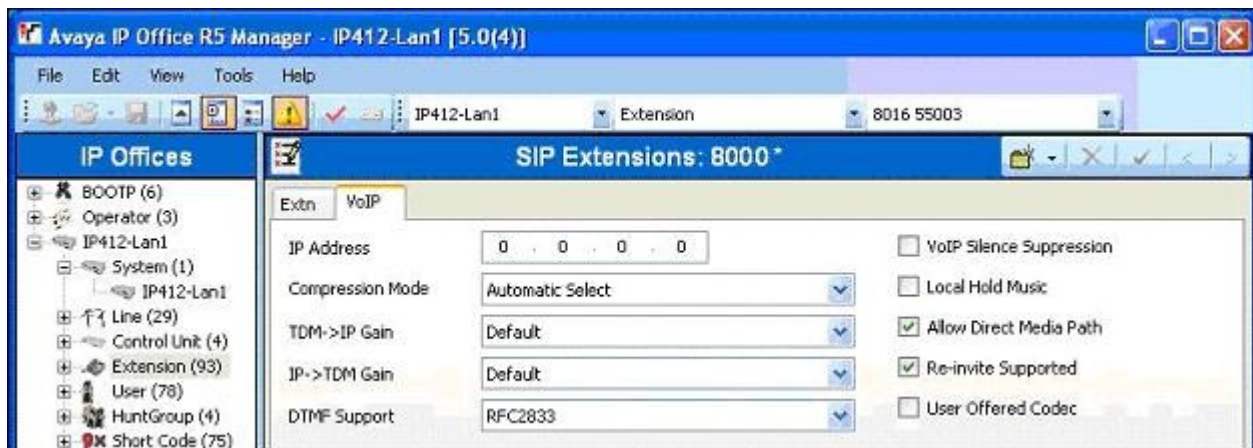
## 4.4. Administer SIP Extensions

From the configuration tree in the left pane, right-click on **Extension**, and select **New > SIP Extension** from the pop-up list to add a new SIP extension. Enter the desired digits for **Base Extension**, and retain the default check in the **Force Authorisation** field shown below.



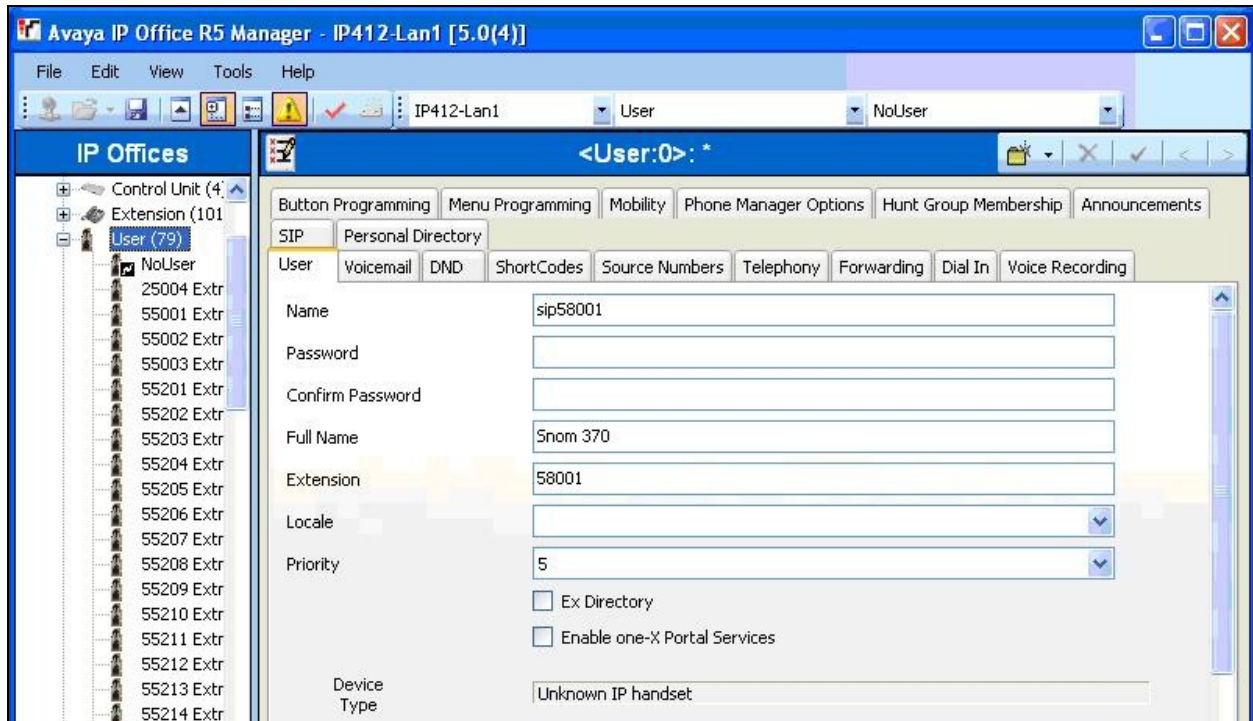
Select the **VoIP** tab, and retain the default values in all fields.

Repeat this section to add a new SIP extension for each snom 3x0 VoIP phone. In the compliance testing, one SIP extension with base extension of “58001” was created.

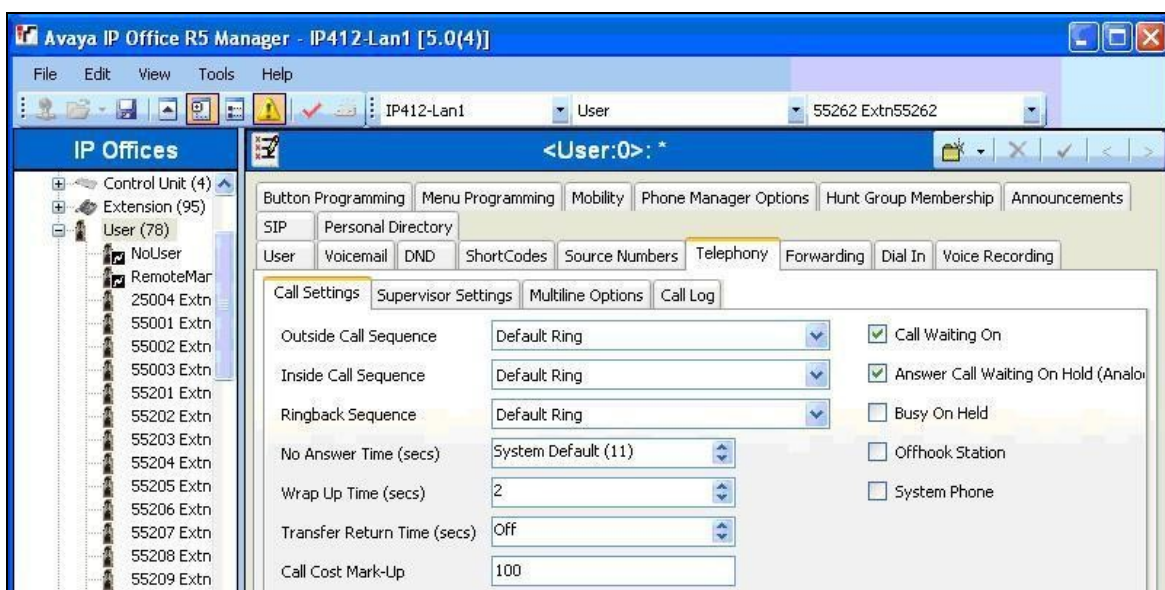


## 4.5. Administer SIP Users

From the configuration tree in the left pane, right-click on **User**, and select **New** from the pop-up list. Enter desired values for **Name** and **Full Name**. For **Extension**, enter the first SIP base extension from **Section 4.4**.



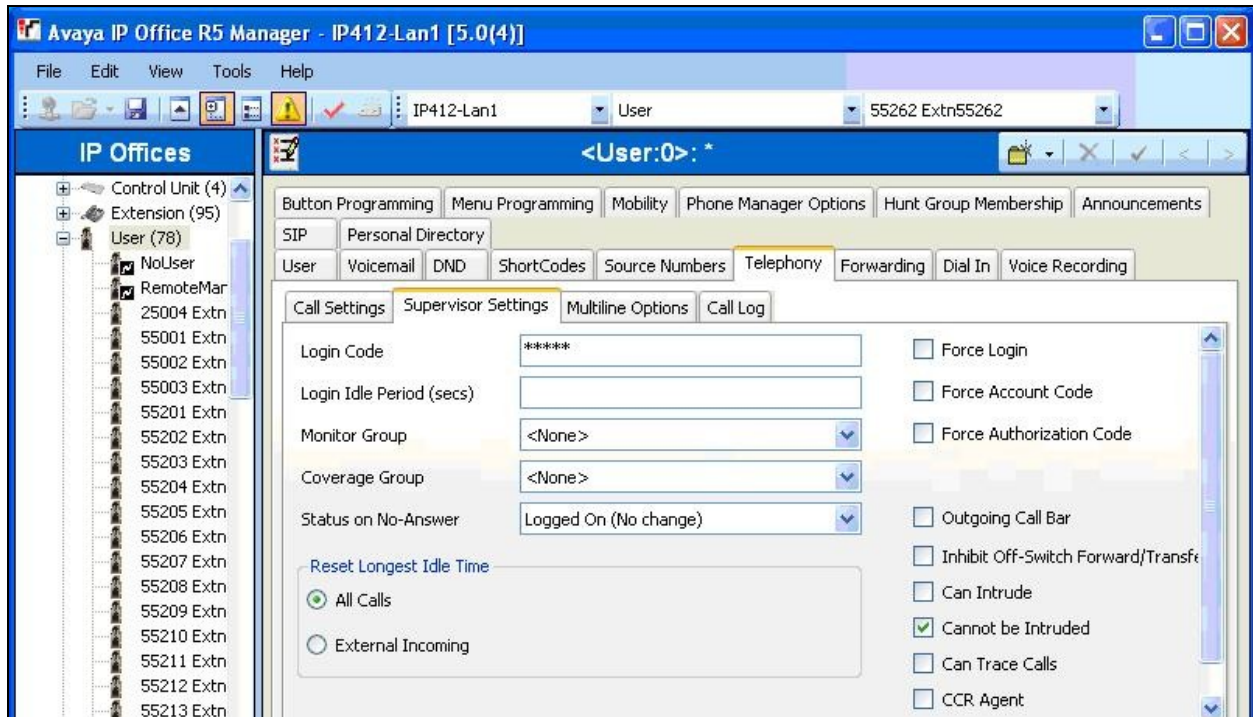
Select the **Telephony** tab, followed by the **Call Settings** sub-tab. Check the **Call Waiting On** field, as shown below.





Select the **Supervisor Settings** tab, and enter a desired **Login Code**.

Repeat this section to add a new user for each SIP extension from **Section 4.4**. In the compliance testing, one user with a name of “sip58001” was created.



## 5. Configure snom 370

This section provides the procedures for configuring snom 370. The procedures include the following areas:

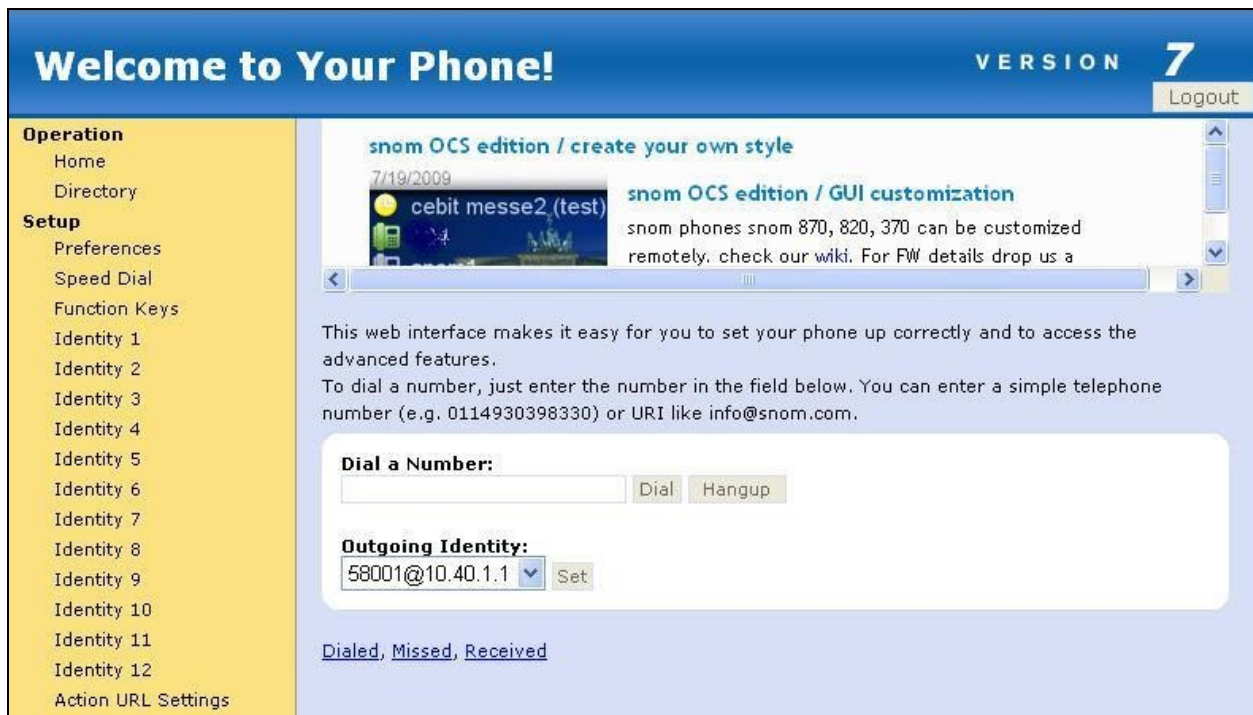
- Launch web interface
- Administer advanced settings
- Administer identity
- Administer function keys

Prior to configuration, follow the procedures in [2] to manually set or obtain the IP address of snom 370.

### 5.1. Launch Web Interface

Access the snom 370 web-based interface by using the URL “http://ip-address” in an Internet browser window, where “ip-address” is the IP address of snom 370. Log in with the appropriate credentials.

The **Welcome to Your Phone** screen is displayed, as shown below.



## 5.2. Administer Advanced Settings

Select **Setup > Advanced** from the left navigation to display the **Advanced Settings** screen. Update the desired parameters to reflect the network configuration.

In the compliance testing, **IP address**, **Netmask**, and **IP Gateway** parameters were updated, as shown below.

Scroll down the screen and click **Save** (not shown).

The screenshot displays the 'Advanced Settings' web interface. The top header is blue with 'Advanced Settings' on the left and 'VERSION 7' with a 'Logout' button on the right. A left-hand navigation menu is yellow and contains two main sections: 'Operation' (with links to Home and Directory) and 'Setup' (with links to Preferences, Speed Dial, Function Keys, and Identities 1 through 12, plus Action URL Settings and Advanced). The 'Advanced' link is selected. The main content area has a light blue background and features several tabs: 'Network' (selected), 'Behavior', 'Audio', 'SIP/RTP', 'QoS/Security', and 'Update'. Under the 'Network' tab, there are three sections: 'Network:', 'DNS:', and 'Time:'. The 'Network:' section includes 'DHCP:' (radio buttons for 'on' and 'off', with 'off' selected), 'IP address:' (text box with '10.40.1.112'), 'Netmask:' (text box with '255.255.255.0'), 'Host Name:' (empty text box), and 'IP Gateway:' (text box with '10.40.1.2'). The 'DNS:' section includes 'Domain:' (empty text box), 'DNS Server 1:' (empty text box), and 'DNS Server 2:' (text box with '192.168.1.254'). The 'Time:' section includes 'NTP Time Server:' (text box with '192.53.103.104'), 'NTP Refresh Time (sec):' (text box with '3600'), and 'Timezone:' (dropdown menu showing '-5 United States - Eastern Time'). Each text box and the dropdown menu have a blue question mark icon to its right.

### 5.3. Administer Identity

Select **Setup > Identify 1** from the left navigation to display the **Configuration Identity 1** screen. Enter the following values for the specified fields, and retain the default values for the remaining fields. Click **Save**.

- **Displayname:** A desired string for the phone display.
- **Account:** The SIP base extension from **Section 4.4**.
- **Password:** The SIP user login code from **Section 4.5**.
- **Registrar:** The LAN IP address from **Section 4.2**.
- **Authentication Username:** The SIP user name from **Section 4.5**.

For the **Mailbox** field, enter “x@y”, where “x” is the existing short code for the Voicemail Node on Avaya IP Office, and “y” is the LAN IP address from **Section 4.2**.

**Configuration Identity 1** VERSION 7

**Operation**  
Home  
Directory

**Setup**  
Preferences  
Speed Dial  
Function Keys  
Identity 1  
Identity 2  
Identity 3  
Identity 4  
Identity 5  
Identity 6  
Identity 7  
Identity 8  
Identity 9  
Identity 10  
Identity 11  
Identity 12  
Action URL Settings  
Advanced  
Trusted Certificates  
Software Update

**Status**  
System Information  
Log  
SIP Trace  
DNS Cache

**Login** **SIP** **NAT** **RTP**

**Login Information:**

Identity active: ☒ on ☐ off ?

Displayname:  ?

Account:  ?

Password:  ?

Registrar:  ?

Outbound Proxy:  ?

Failover Identity:  ?

Authentication Username:  ?

Mailbox:  ?

Ringtone:  ?

Custom Melody URL:  ?

Display text for idle screen:  ?

XML Idle Screen URL:  ?

Ring After Delay (sec):  ?

Record Missed Calls: ☒ on ☐ off ?

Record Dialed Calls: ☒ on ☐ off ?

Record Received Calls: ☒ on ☐ off ?

## 5.4. Administer Function Keys

Select **Setup > Function Keys** from the left navigation to display the **Function Keys** screen. Locate the **RETRIEVE** function key. For **Type**, select “Speed Dial”. For **Number**, enter “x@y” where “x” is the existing short code for the Voicemail Node on Avaya IP Office, and “y” is the LAN IP address from **Section 4.2**.

Scroll down the screen and click **Save** (not shown).

**Function Keys** VERSION 7 Logout

**Operation**  
Home  
Directory

**Setup**  
Preferences  
Speed Dial  
Function Keys  
Identity 1  
Identity 2  
Identity 3  
Identity 4  
Identity 5  
Identity 6  
Identity 7  
Identity 8  
Identity 9  
Identity 10  
Identity 11  
Identity 12  
Action URL Settings  
Advanced  
Trusted Certificates  
Software Update

**Status**  
System Information  
Log  
SIP Trace  
DNS Cache

**Key Settings:**  
On this page you can specify the settings for programmable keys on your snom phone. Use **Context** to specify the identity context for that key e.g. this identity will be used to subscribe for a particular extension. **Type** will select the actual functionality of a particular key. In the last argument field **Number**, the actual telephone number, sip url, dtmf sequence, action url or key type can be stored. Please refer to your phone manual for more details.

Reg CHist Dir Speed

	Type	Number
RECORD	Key Event	F_REC
RETRIEVE	Speed Dial	*96@10.40.1.1
REDIAL	Key Event	F_REDIAL
HELP	Key Event	F_HELP
SNOM	Key Event	F_SNOM
CONFERENCE	Key Event	F_CONFERENCE
TRANSFER	Key Event	F_TRANSFER
HOLD	Key Event	F_R
DND	Key Event	F_DND
DIRECTORY	Key Event	F_ADR_BOOK
MENU	Key Event	F_MENU

Active Line P7 P8

## 6. General Test Approach and Test Results

The feature test cases were performed manually. Calls were manually established between snom 370 with Avaya H.323, Avaya Digital, or PSTN endpoints, and call controls such as hold and conference were performed from snom 370.

The serviceability test cases were performed manually by disconnecting and reconnecting the LAN cables to snom 370.

All test cases were executed.

The one observation from the compliance testing is that Avaya IP Office can successfully activate Do Not Disturb, but sends back 503 Service Unavailable for Do Not Disturb activation requests.

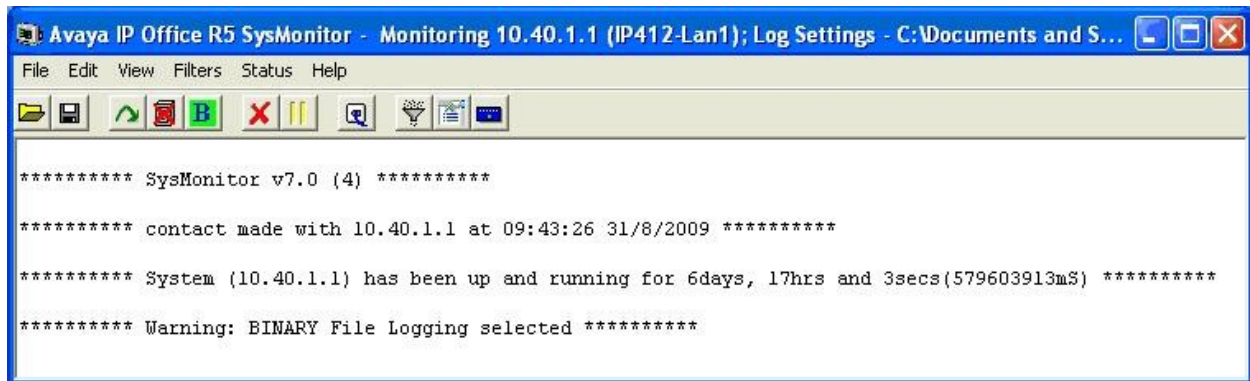


## 7. Verification Steps

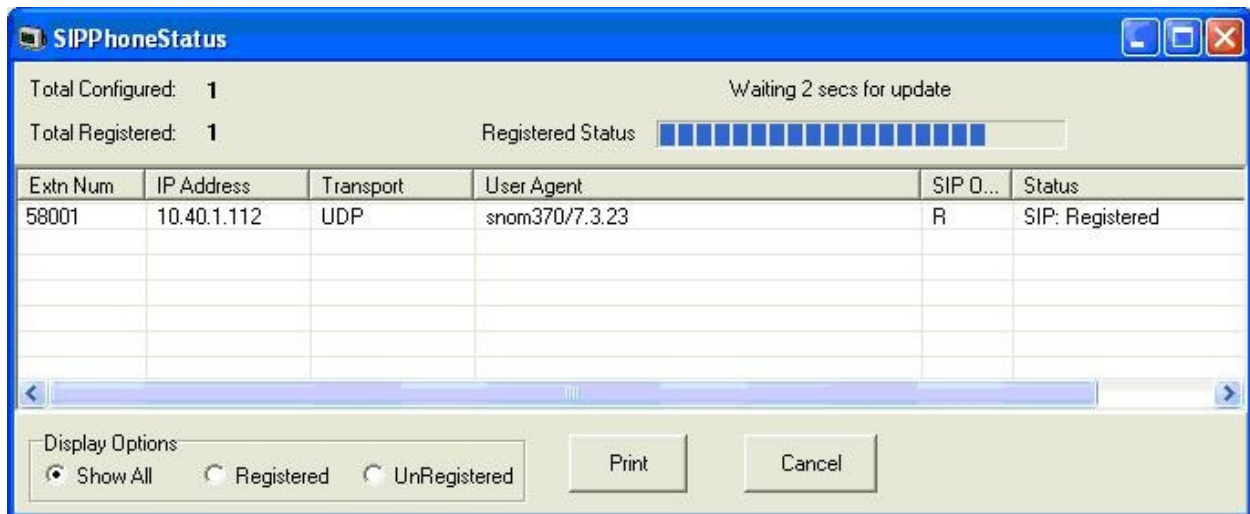
This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and snom 370.

### 7.1. Verify Avaya IP Office

From a PC running the Avaya IP Office Monitor application, select **Start > Programs > IP Office > Monitor** to launch the application. The **Avaya IP Office R5 SysMonitor** screen is displayed, as shown below. Select **Status > SIP Phone Status** from the top menu.



The **SIPPhoneStatus** screen is displayed. Verify that there is an entry for each SIP extension from **Section 4.4**, and that the **User Agent** is “snom370”, and the **Status** is “SIP: Registered”, as shown below.



## 7.2. Verify snom 370

Follow the procedure in **Section 5.1** to access the snom 370 web-based interface. Select **Status > System Information** from the left navigation to display the **System Information** screen. Verify that the **SIP Identify Status** for Identity 1 is “Ok”, as shown below.

The screenshot shows the 'System Information' page of the snom 370 web interface. The page has a blue header with 'System Information' on the left and 'VERSION 7' on the right, with a 'Logout' button. A yellow sidebar on the left contains a navigation menu with sections: 'Operation' (Home, Directory), 'Setup' (Preferences, Speed Dial, Function Keys, Identity 1-12, Action URL Settings, Advanced, Trusted Certificates, Software Update), and 'Status' (System Information, Log). The main content area is white and displays two sections: 'System Information' and 'SIP Identity'. The 'System Information' section lists various system details, and the 'SIP Identity' section shows the status for nine identities, with Identity 1 being 'Ok'.

System Information	
Phone Type:	snom370-SIP
MAC-Address:	000413266DD7
IP-Address:	10.40.1.112
Firmware-Version:	snom370-SIP 7.3.23 14955
Firmware-URL:	
Production Information:	Mac:000413266DD7;Version:Standard;Hardware:snom370 (H: R2A,PO:2008-10015A);Date:28/04/08;Copyright(C) snom technology AG
Uptime:	0 days, 1 hours, 21 minutes
Memfree:	10712 K
Bootloader-Version:	1.1.3-p

SIP Identity	
Status:	
Identity 1 Status:	58001@10.40.1.1: Ok
Identity 2 Status:	
Identity 3 Status:	
Identity 4 Status:	
Identity 5 Status:	
Identity 6 Status:	
Identity 7 Status:	
Identity 8 Status:	
Identity 9 Status:	

## 8. Conclusion

These Application Notes describe the configuration steps required for snom 3x0 VoIP phones to successfully interoperate with Avaya IP Office. All feature and serviceability test cases were completed with an observation noted in **Section 6**.

## 9. Additional References

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

1. *IP Office 5.0 Documentation CD*, August 2009, available at <http://support.avaya.com>.
2. *Snom370 Phone User Interface*, available at <http://www.snom.com>.
3. *Snom370 Web User Interface*, available at <http://www.snom.com>.
4. *User Manual snom 300 | 320 | 360 | 370*, available at <http://www.snom.com>.

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