



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

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# **Application Notes for snom 820 VoIP Telephone with Avaya IP Office – Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps required for snom 820 VoIP telephone to interoperate with Avaya IP Office. The snom 820 VoIP telephone is a SIP-based phone that integrates with Avaya IP Office as a SIP endpoint.

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 820 VoIP telephone to interoperate with Avaya IP Office. The snom 820 VoIP telephone is a SIP-based phone that integrates with Avaya IP Office as a SIP endpoint.

## 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 820 to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet cable to the device.

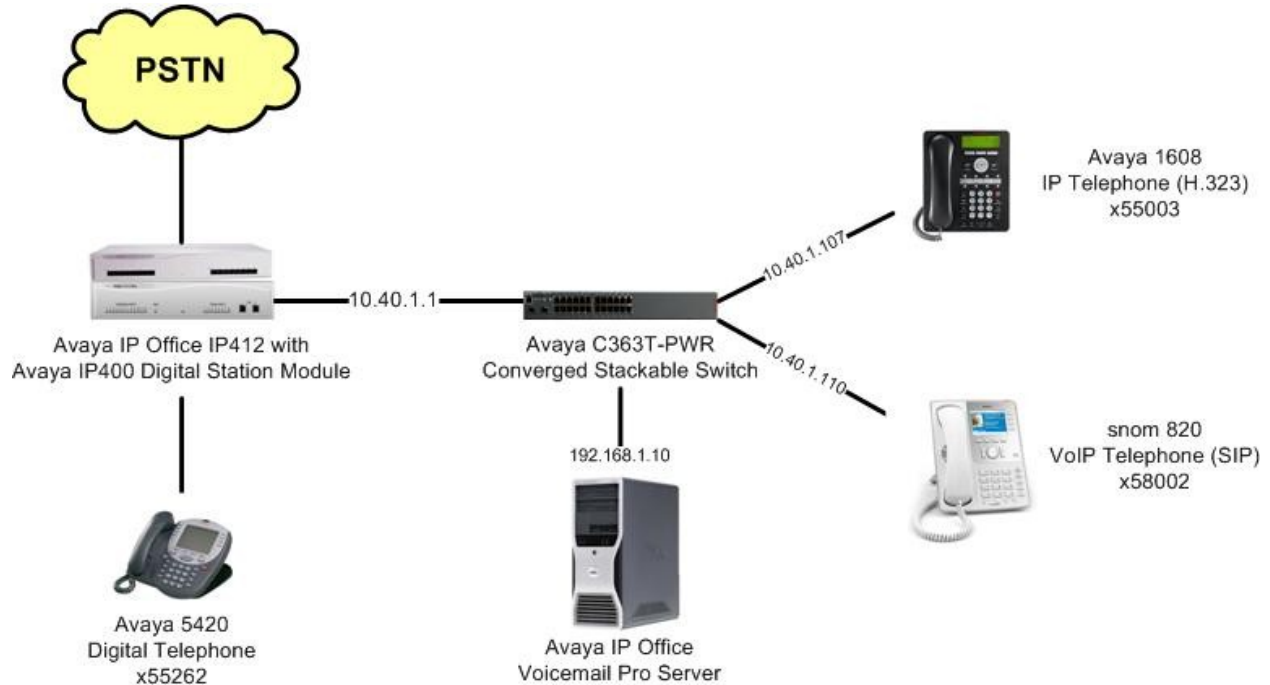
## 1.2. Support

Technical support on snom 820 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 820 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 820 VoIP Telephone (SIP)	8.1.3

## 4. Configure Avaya IP Office

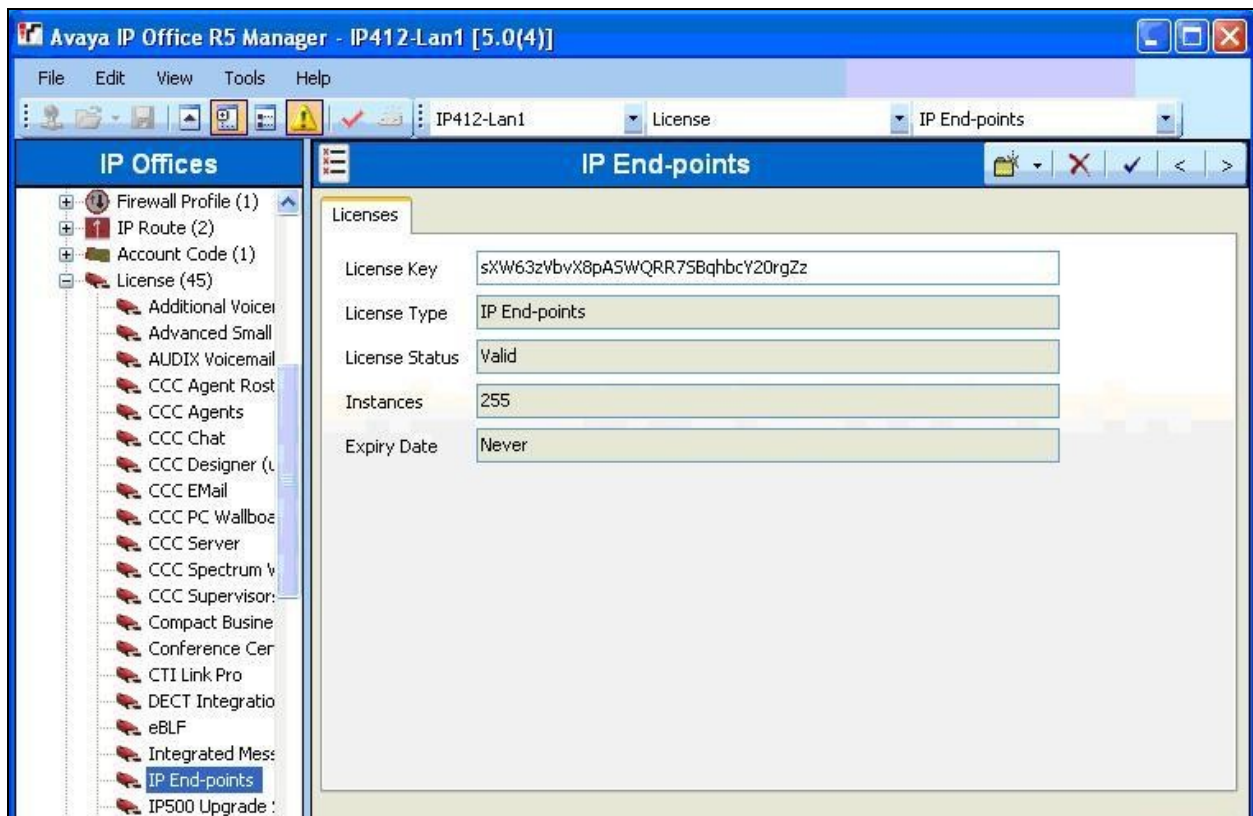
This section provides the procedures for configuring Avaya IP Office. The procedures include the following areas:

- 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”.



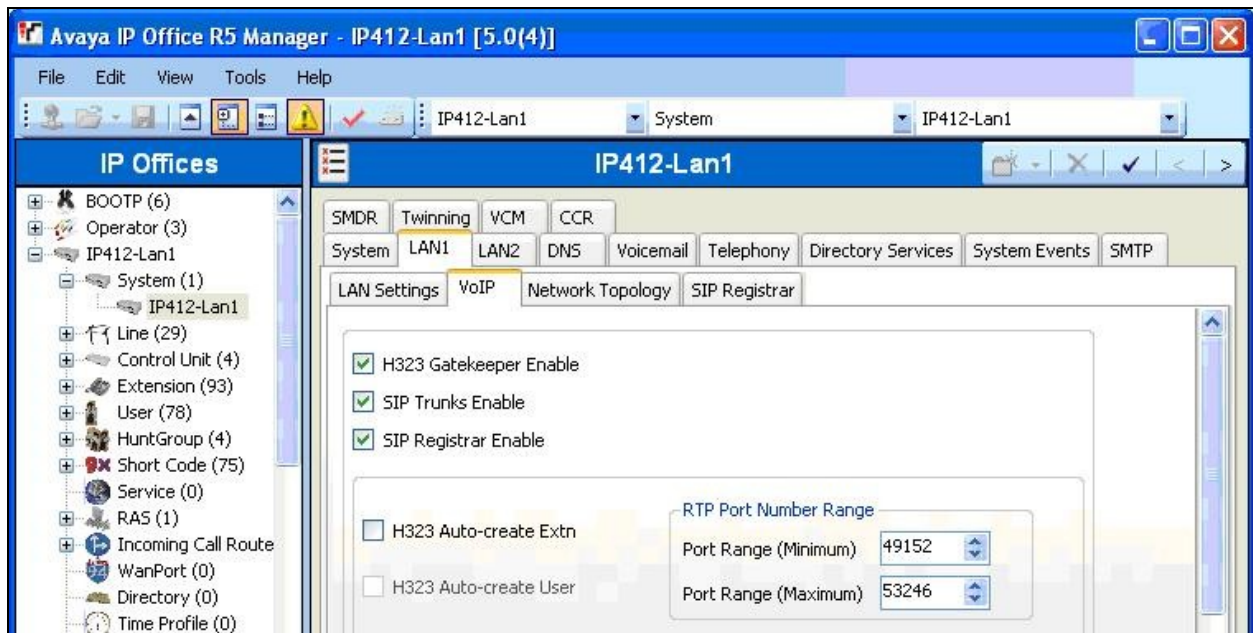
## 4.2. Obtain LAN IP Address

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.

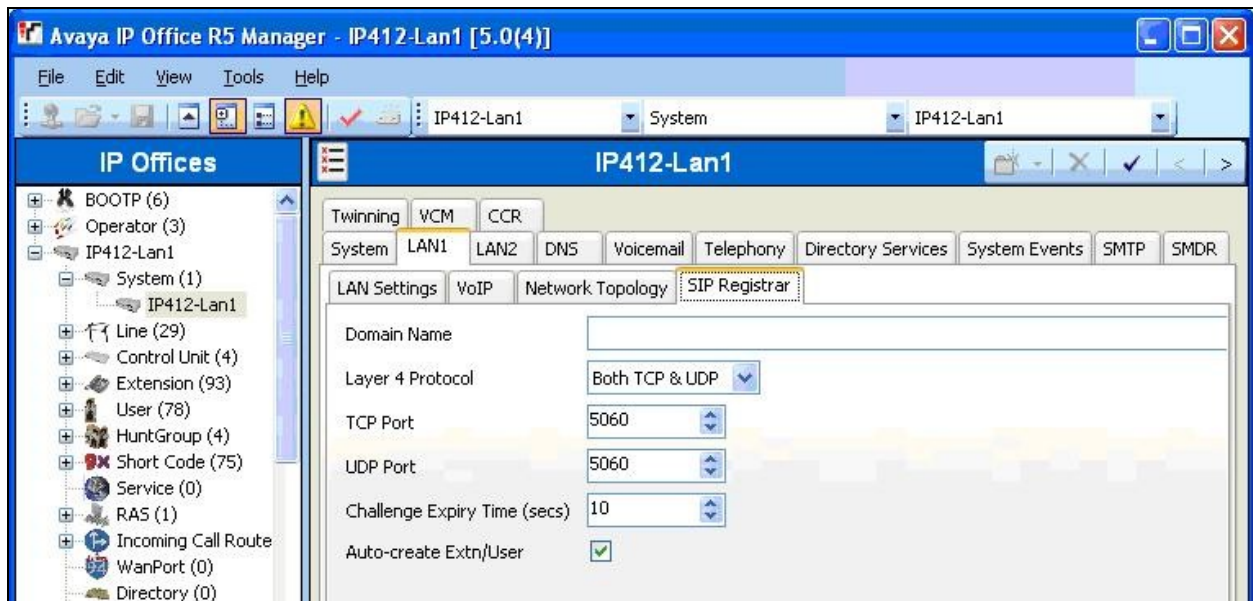


### 4.3. Administer SIP Registrar

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.

The screenshot shows the Avaya IP Office R5 Manager interface. The left pane displays the configuration tree with 'Extension (98)' selected. The right pane shows the 'SIP Extensions: 8001 \*' configuration window. The 'VoIP' tab is active. The fields are as follows:

Field	Value
Extension ID	8001
Base Extension	58002
Caller Display Type	On
Reset Volume After Calls	<input type="checkbox"/>
Device type	Unknown SIP device
Module	0
Port	0
Disable Speakerphone	<input type="checkbox"/>
Force Authorisation	<input checked="" type="checkbox"/>

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

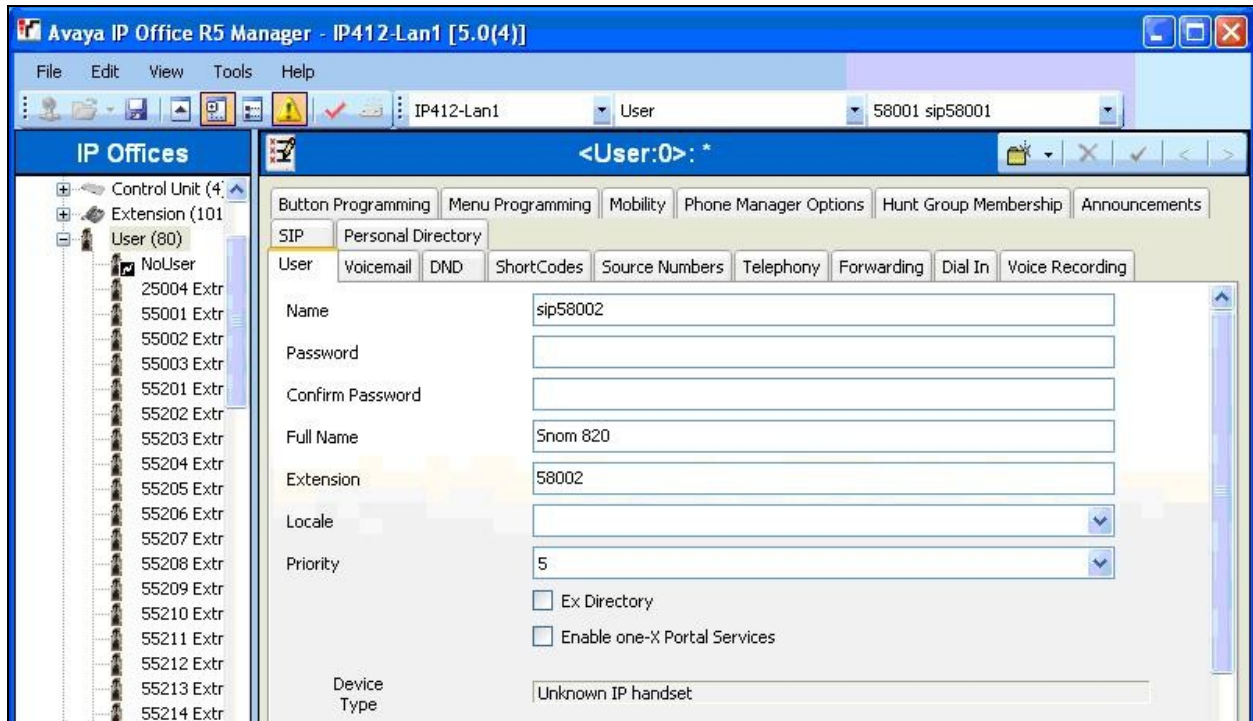
Repeat this section to add a new SIP extension for each snom 820 VoIP telephone. In the compliance testing, one SIP extension with base extension of “58002” was created.

The screenshot shows the Avaya IP Office R5 Manager interface. The left pane displays the configuration tree with 'Extension (93)' selected. The right pane shows the 'SIP Extensions: 8001 \*' configuration window. The 'VoIP' tab is active. The fields are as follows:

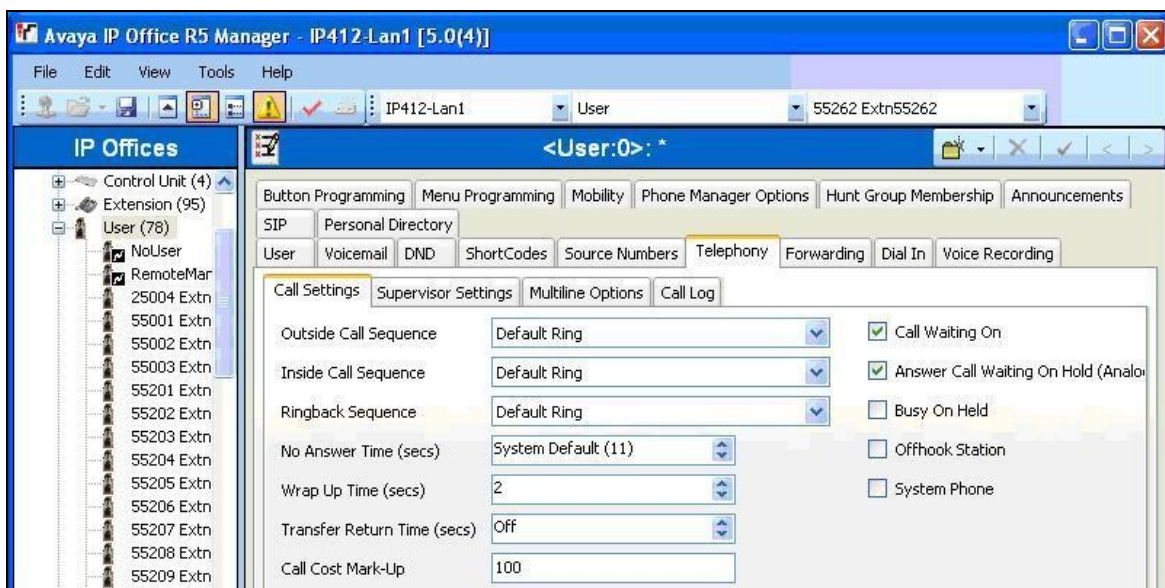
Field	Value
IP Address	0 . 0 . 0 . 0
Compression Mode	Automatic Select
TDM->IP Gain	Default
IP->TDM Gain	Default
DTMF Support	RFC2833
VoIP Silence Suppression	<input type="checkbox"/>
Local Hold Music	<input type="checkbox"/>
Allow Direct Media Path	<input checked="" type="checkbox"/>
Re-invite Supported	<input checked="" type="checkbox"/>
User Offered Codec	<input type="checkbox"/>

## 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**.



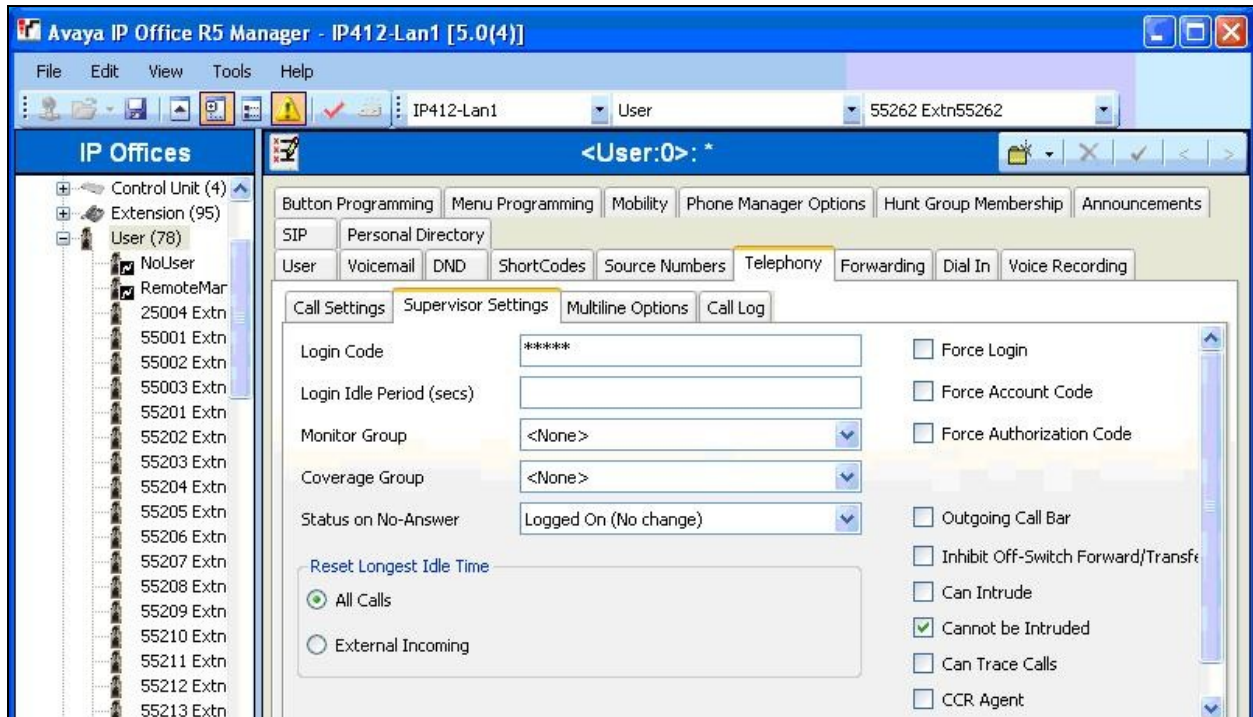
Select the **Telephony** tab, followed by the **Call Settings** sub-tab. Check the **Call Waiting On** field, as shown below.





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 “sip58002” was created.



## 5. Configure snom 820

This section provides the procedures for configuring snom 820. The procedures include the following areas:

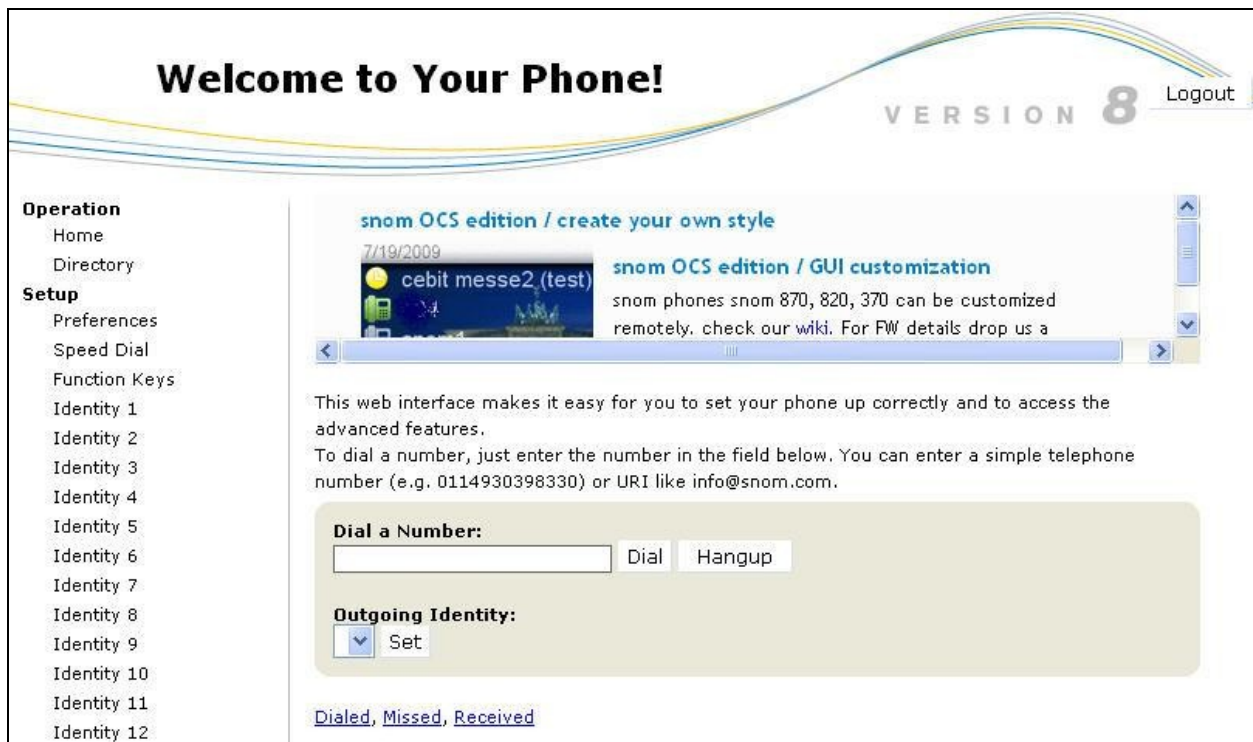
- Launch web interface
- Administer advanced settings
- Administer identity
- Administer function keys

Prior to configuration, follow the procedures in [2] to manually set or obtain the IP address of snom 820.

### 5.1. Launch Web Interface

Access the snom 820 web-based interface by using the URL “http://ip-address” in an Internet browser window, where “ip-address” is the IP address of snom 820. 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).

**Advanced Settings** Logout VERSION

**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

**Network** Behavior Audio SIP/RTP QoS/Security Update

**Network:**  
DHCP: ☐ on ☒ off ?  
IP address:  ?  
Netmask:  ?  
Host Name:  ?  
IP Gateway:  ?

**Wifi:**  
AuthMode:  ?

**DNS:**  
Domain:  ?  
DNS Server 1:  ?  
DNS Server 2:  ?

**Time:**  
NTP Time Server:  ?  
NTP Refresh Time (sec):  ?  
Timezone:  ?

### 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 8 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

**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”, and click **Save** (not shown). The **Number** field associated with the **Retrieve** function key is then automatically updated.

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

**Function Keys** VERSION 8 [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  
Subscriptions  
PCAP Trace

**? 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.

Context	Type	Number	
Active	Line		P1
Active	Line		P2
Active	Line		P3
Active	Line		P4

Type	Number	
Speed Dial	*96@10.40.1.1	Retrieve
Key Event	DND	DND
Key Event	Directory	Directory
Key Event	Menu	Menu
Key Event	Transfer	Transfer
Key Event	Hold	Hold



## **6. General Test Approach and Test Results**

The feature test cases were performed manually. Calls were manually established between snom 820 with Avaya H.323, Avaya Digital, or PSTN endpoints, and call controls such as hold and conference were performed from snom 820.

The serviceability test cases were performed manually by disconnecting and reconnecting the LAN cables to snom 820.

All test cases were executed.

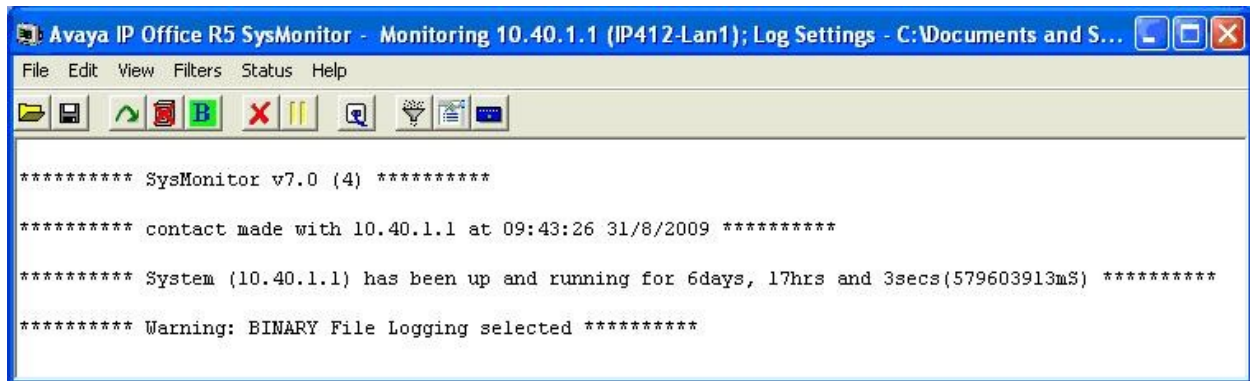
The one observation from the compliance testing is that Avaya IP Office can successfully activate Do Not Disturb, but sends back 503 Service Unavailable for Do Not Disturb activation requests.

## 7. Verification Steps

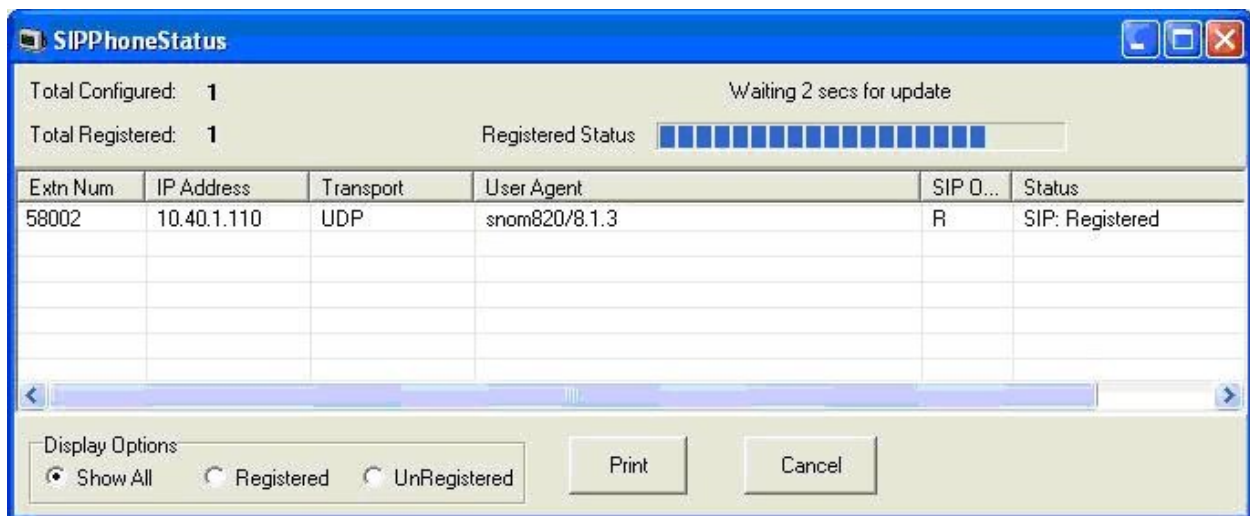
This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and snom 820.

### 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 “snom820”, and the **Status** is “SIP: Registered”, as shown below.



## 7.2. Verify snom 820

Follow the procedure in **Section 5.1** to access the snom 820 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 displays the 'System Information' page of the snom 820 web interface. The page has a header with the title 'System Information' and a 'Logout' button. A left sidebar contains navigation links under three categories: 'Operation' (Home, Directory), 'Setup' (Preferences, Speed Dial, Function Keys, and a list of 12 Identities), and 'Status' (System Information, Log, SIP Trace). The main content area is divided into three sections: 'System Information', 'SIP Identity Status', and 'Ethernet Status'. The 'System Information' section lists details like Phone Type, MAC-Address, IP-Address, and Firmware-Version. The 'SIP Identity Status' section shows the status for each of the 12 identities, with Identity 1 being 'Ok'. The 'Ethernet Status' section shows the connection type and status for both Net Port and PC Port.

System Information:	
Phone Type:	snom820-SIP
MAC-Address:	000413400DB6
IP-Address:	10.40.1.110
Firmware-Version:	snom820-SIP 8.1.3 15856
Firmware-URL:	
Production Information:	
Mac:000413400DB6;Hardware:snom820 (MPCB-1760_V16_S1_P2, KPCB-1588_V15_S1_P3, SPCB-1590_V11_S0_P3);Date:10/08;Copyright(C) snom technology AG	
Uptime:	0 days, 1 hours, 23 minutes
Memfree:	45244 K
Bootloader-Version:	1.1.3-IFX-02.01.06

SIP Identity Status:	
Identity 1 Status:	58002@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:	
Identity 10 Status:	
Identity 11 Status:	
Identity 12 Status:	

Ethernet Status:	
Net Port:	Connection Type: 100 Mbit Full Duplex Status: connected
PC Port:	Connection Type: 100 Mbit Full Duplex Status: not connected

## 8. Conclusion

These Application Notes describe the configuration steps required for snom 820 VoIP telephone 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. *Snom820 Phone User Interface*, available at <http://www.snom.com>.
3. *Snom820 Web User Interface*, available at <http://www.snom.com>.
4. *snom 820 User Manual*, V.8, available at <http://www.snom.com>.

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