



**Avaya Solution & Interoperability Test Lab**

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## **Application Notes for Valcom VIP-201 PagePro IP with Avaya Communication Manager using Avaya SIP Enablement Services – Issue 1.0**

### **Abstract**

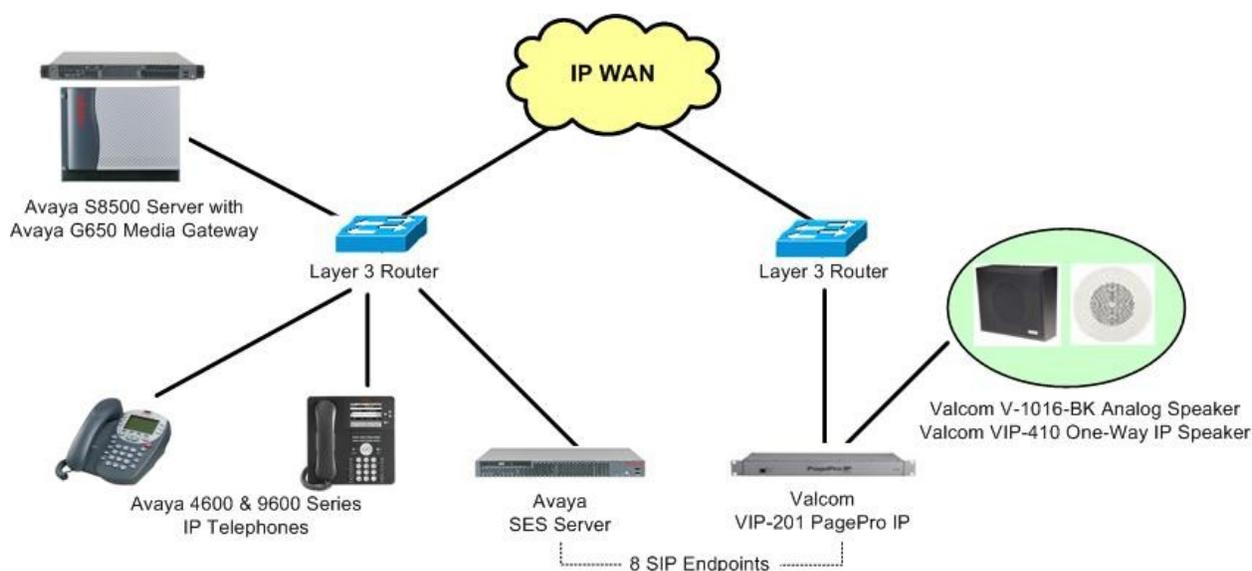
These Application Notes describe the configuration steps required for the Valcom VIP-201 PagePro IP device to successfully interoperate with Avaya Communication Manager using Avaya SIP Enablement Services. The Valcom VIP-201 PagePro IP is a SIP-based paging device that integrates with Avaya Communication Manager 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 the Valcom VIP-201 PagePro IP device to successfully interoperate with Avaya Communication Manager using Avaya SIP Enablement Services (SES). The Valcom VIP-201 PagePro IP is a SIP-based paging device that integrates with Avaya Communication Manager as SIP endpoints and registers to Avaya SES.

The Valcom VIP-201 PagePro IP can register with Avaya SES as eight separate SIP endpoints. When a call is placed to one of the SIP access numbers, the device answers the call and automatically establishes a one-way communication with a preconfigured group of IP speakers and/or analog speakers/gateways associated with the access number. In the compliance testing, a Valcom V-1016-BK Analog Speaker and a Valcom VIP-410 One-Way IP Speaker were used as the preconfigured destinations for the SIP access numbers.



**Figure 1: Valcom VIP-201 PagePro IP with Avaya Communication Manager using Avaya SES**

## 2. Equipment and Software Validated

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

Equipment	Software
Avaya S8500 Server	Avaya Communication Manager 5.0, R015x.00.0.825.4
Avaya G650 Media Gateway <ul style="list-style-type: none"><li>• TN799DP C-LAN Circuit Pack</li></ul>	HW13 FW021
Avaya SIP Enablement Services	5.0, SES-5.0.0.0-825.31
Avaya 4600 Series IP Telephones (H.323)	2.9
Avaya 9600 Series IP Telephones (SIP)	2.2
Valcom VIP-201 PagePro IP	2.08-1.16
Valcom VIP-102B IP Solutions Setup Tool	2.1.0.0
Valcom V-1016-BK Analog Speaker	NA
Valcom VIP-410 One-Way IP Speaker	2.08-1.16

### 3. Configure Avaya Communication Manager

The detailed administration of basic connectivity between Avaya Communication Manager and Avaya SES is not the focus of these Application Notes and will not be described. For administration of basic connectivity to Avaya SES, refer to the appropriate documentation listed in **Section 10**. This section provides the procedures for the following:

- Verify Avaya Communication Manager License
- Administer SIP stations
- Administer IP codec set
- Administer IP network region

#### 3.1. Verify Avaya Communication Manager License

Log into the System Access Terminal (SAT) to verify that the Avaya Communication Manager license has proper permissions for features illustrated in these Application Notes. Use the “display system-parameters customer-options” command to verify that there is sufficient capacity for SIP stations by comparing the **Maximum Off-PBX Telephones - OPS** field value with the corresponding value in the **USED** column. The difference between the two values needs to be greater than or equal to the desired SIP access numbers for the Valcom VIP-201 PagePro IP device.

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

G3 Version: V15                                     Software Package: Standard
Location: 1                                         RFA System ID (SID): 1
Platform: 12                                       RFA Module ID (MID): 1

                                USED
Platform Maximum Ports: 3200 234
Maximum Stations: 2400 173
Maximum XMOBILE Stations: 0 0
Maximum Off-PBX Telephones - EC500: 0 0
Maximum Off-PBX Telephones - OPS: 100 6
Maximum Off-PBX Telephones - PBFMC: 0 0
Maximum Off-PBX Telephones - PVFMC: 0 0
Maximum Off-PBX Telephones - SCCAN: 0 0

(NOTE: You must logoff & login to effect the permission changes.)
```

### 3.2. Administer SIP Stations

Add a SIP station for each SIP access number for the Valcom VIP-201 PagePro IP device by using the “add station n” command, where “n” is an available extension number. Enter “X” for **Port** to indicate no hardware associated with the station. Enter a descriptive **Name**, and retain the default values for the remaining fields. Note that there is no need to set the security code, as this will be administered on the Avaya SES server.

```

add station 68201                                     Page 1 of 5
                                                    STATION
Extension: 68201                                     Lock Messages? n          BCC: 0
Type: 6408D+                                         Security Code:            TN: 1
Port: X                                             Coverage Path 1:         COR: 1
Name: Valcom VIP-201 P1                            Coverage Path 2:         COS: 1
                                                    Hunt-to Station:
STATION OPTIONS
Loss Group: 2                                         Time of Day Lock Table:
Data Module? n                                       Personalized Ringing Pattern: 1
Speakerphone: 2-way                                  Message Lamp Ext: 68201
Display Language: english                            Mute Button Enabled? y
Survivable COR: internal                             Media Complex Ext:
Survivable Trunk Dest? y                             IP SoftPhone? n
  
```

Repeat the “add station n” command to add the desired number of SIP stations. For the compliance testing, eight SIP stations were administered for the Valcom VIP-201 PagePro IP device, as shown below.

```

list station 68201 count 10                          Page 1
                                                    STATIONS
Ext/      Port/   Name/      Room/      Cv1/  COR/  Cable/
 Hunt-to  Type   Surv GK NN  Move      Data Ext  Cv2  COS  Jack
68201    X      Valcom VIP-201 P1      no      1
        6408D+
68202    X      Valcom VIP-201 P2      no      1
        6408D+
68203    X      Valcom VIP-201 P3      no      1
        6408D+
68204    X      Valcom VIP-201 P4      no      1
        6408D+
68205    X      Valcom VIP-201 P5      no      1
        6408D+
68206    X      Valcom VIP-201 P6      no      1
        6408D+
68207    X      Valcom VIP-201 P7      no      1
        6408D+
68208    X      Valcom VIP-201 P8      no      1
        6408D+
  
```

For each SIP station, specify that calls to the station be routed to Avaya SES by using the “change off-pbx-telephone station-mapping n” command, where “n” is the station extension. Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Application:** Enter “OPS” to indicate off-PBX station.
- **Phone Number:** Same digits from the **Station Extension** field.
- **Trunk Selection:** The existing trunk group to reach Avaya SES, in this case “1”.
- **Config Set:** An existing configuration set to be used for the off-pbx call treatment.

```
change off-pbx-telephone station-mapping 68201
```

Page 1 of 2

STATIONS WITH OFF-PBX TELEPHONE INTEGRATION

Station Extension	Application	Dial Prefix	CC	Phone Number	Trunk Selection	Config Set
68201	OPS	-	-	68201	1	1

Repeat the “change off-pbx-telephone station-mapping n” command for all created SIP stations. For the compliance testing, eight SIP stations were administered, as shown below.

```
list off-pbx-telephone station-mapping
```

STATION TO OFF-PBX TELEPHONE MAPPING

Station Extension	Appl	CC	Phone Number	Config Set	Trunk Select	Mapping Mode	Calls Allowed
68201	OPS		68201	1 /	1	both	all
68202	OPS		68202	1 /	1	both	all
68203	OPS		68203	1 /	1	both	all
68204	OPS		68204	1 /	1	both	all
68205	OPS		68205	1 /	1	both	all
68206	OPS		68206	1 /	1	both	all
68207	OPS		68207	1 /	1	both	all
68208	OPS		68208	1 /	1	both	all

### 3.3. Administer IP Codec Set

Use the “change ip-codec-set n” command, where “n” is an existing codec set number that will be used for integration with Valcom. Enter the G.711 codec in the **Audio Codec** field. Note that the Valcom VIP-201 PagePro IP device only supports the G.711 codec.

```
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.711MU      n         2       20
2:
```

### 3.4. Administer IP Network Region

Use the “change ip-network-region n” command, where “n” is the existing network region used for integration with Valcom. Disable the **Intra-region IP-IP Direct Audio**, **Inter-region IP-IP Direct Audio**, and **IP Audio Hairpinning** fields, as shown below.

For ease of compliance testing, the same network region was used for the Avaya endpoints. If the network configuration uses a different network region for the Avaya endpoints, then **Page 3** can be used to specify which codec set to use for calls between regions.

```
change ip-network-region 1                               Page 1 of 19
                                                         IP NETWORK REGION
Region: 1
Location:          Authoritative Domain: avremote.com
Name:
MEDIA PARAMETERS                                     Intra-region IP-IP Direct Audio: no
Codec Set: 1                                           Inter-region IP-IP Direct Audio: no
UDP Port Min: 2048                                     IP Audio Hairpinning? n
UDP Port Max: 65531
DIFFSERV/TOS PARAMETERS                               RTCP Reporting Enabled? y
Call Control PHB Value: 34                             RTCP MONITOR SERVER PARAMETERS
Audio PHB Value: 46                                   Use Default Server Parameters? y
Video PHB Value: 26
```

## 4. Configure Avaya SIP Enablement Services

This section provides the procedures for configuring Avaya SIP Enablement Services (SES). The procedures include the following areas:

- Launch SES administration interface
- Administer users

### 4.1. Launch SES Administration Interface

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



In the subsequent screen, select **Launch SES Administration Interface**.

AVAYA		Integrated Management Standard Management Solutions	
Help Log Off			
	<b>SES Administration</b>	The Administration Web Interface allows you to administer this SES server.	<a href="#">Launch SES Administration Interface</a>
	<b>Maintenance</b>	The Maintenance Web Interface allows you to maintain, troubleshoot, and configure the media server.	<a href="#">Launch Maintenance Web Interface</a>

The **Top** screen is displayed next.

AVAYA		Integrated Management SIP Server Management	
Help Exit			
<b>Top</b>			
<input type="checkbox"/> Users	Address Map Priorities	<b>Manage Users</b>	Add and delete Users.
<input type="checkbox"/> Adjunct Systems		<b>Manage Address Map Priorities</b>	Adjust Address Map Priorities.
<input type="checkbox"/> Certificate Management		<b>Manage Adjunct Systems</b>	Add and delete Adjunct Systems.
<input type="checkbox"/> Conferences	Emergency Contacts	<b>Certificate Management</b>	Manage Certificates.
<input type="checkbox"/> Export/Import to ProVision		<b>Manage Conferencing</b>	Add and delete Conference Extensions.
<input type="checkbox"/> Hosts	IM logs	<b>Manage Emergency Contacts</b>	Add and delete Emergency Contacts.
<input type="checkbox"/> Media Servers		<b>Export Import to ProVision</b>	Export and import data using ProVision on this host.
<input type="checkbox"/> Media Server Extensions		<b>Manage Hosts</b>	Add and delete Hosts.
<input type="checkbox"/> Server Configuration		<b>IM logs</b>	Download IM Logs.
<input type="checkbox"/> SIP Phone Settings		<b>Manage Media Servers</b>	Add and delete Media Servers.
<input type="checkbox"/> Survivable Call Processors	System Status		
<input type="checkbox"/> Trace Logger			
<input type="checkbox"/> Trusted Hosts			

## 4.2. Administer Users

Select **Users > Add** from the left pane to display the **Add User** screen. Enter the following values for the specified fields, and retain the default values in the remaining fields. Note that the host IP address is masked in the screen shot below for privacy. Click on **Add** at the bottom of the screen to submit these changes.

- **Primary Handle:** The extension of the SIP station from **Section 3.2**.
- **Password:** Enter a desired password.
- **Confirm Password:** Re-enter the same password.
- **Host:** Select the applicable host.
- **First Name:** A descriptive first name.
- **Last Name:** A descriptive last name.
- **Add Media Server Extension:** Check the box.

The screenshot shows the Avaya Integrated Management SIP Server Management interface. The top left features the Avaya logo, and the top right displays 'Integrated Management SIP Server Management'. A navigation menu on the left includes 'Help', 'Exit', and a tree view under 'Top' with 'Users' expanded to show 'Add'. The main content area is titled 'Add User' and contains a form with the following fields: Primary Handle\* (68201), User ID, Password\* (masked with dots), Confirm Password\* (masked with dots), Host\* (dropdown menu showing 'xx.xxx.xxx.xxx'), First Name\* (VIP-201 P1), Last Name\* (Valcom), Address 1, Address 2, Office, City, State, Country, Zip, Survivable Call Processor (dropdown menu showing 'none'), and Add Media Server Extension (checkbox checked). A note at the bottom states 'Fields marked \* are required.' and an 'Add' button is located at the bottom left of the form area.

The **Continue** screen is displayed next. Click on the **Continue** button.



The screenshot shows the Avaya Integrated Management SIP Server Management interface. The top left corner features the Avaya logo. The top right corner displays the text "Integrated Management SIP Server Management". Below the logo, there is a navigation menu with "Help" and "Exit" options. The main content area is titled "Continue" and displays the message "User ID 68201 added." Below this message is a "Continue" button. On the left side, there is a sidebar menu with the following items: "Top", "Users" (expanded), "Add", "Default Profile", "Delete", "Edit", and "List".

The **Add Media Server Extension** screen is displayed. This screen is used to associate a user with a media server extension on Avaya Communication Manager. Enter the following values for the specified fields. Click on **Add** to submit these changes.

- **Extension:** The extension of the SIP station from **Section 3.2**.
- **Media Server:** Select the appropriate media server, in this case “cmremote1”.

Repeat this section to create a SIP user and a media server extension for each SIP station in **Section 3.2**. For the compliance testing, eight SIP users and media server extensions were administered.



The screenshot shows the Avaya Integrated Management SIP Server Management interface. The top left corner features the Avaya logo. The top right corner displays the text "Integrated Management SIP Server Management". Below the logo, there is a navigation menu with "Help" and "Exit" options. The main content area is titled "Add Media Server Extension" and displays the message "Add Media Server extension for user 68201." Below this message, there are two input fields: "Extension" with the value "68201" and "Media Server" with the value "cmremote1" selected from a dropdown menu. Below these fields, there is a note: "Fields marked \* are required." At the bottom of the form is an "Add" button. On the left side, there is a sidebar menu with the following items: "Top", "Users" (expanded), "Add", "Default Profile", "Delete", "Edit", "List", "Password", "Search", and "Manage All Registered".

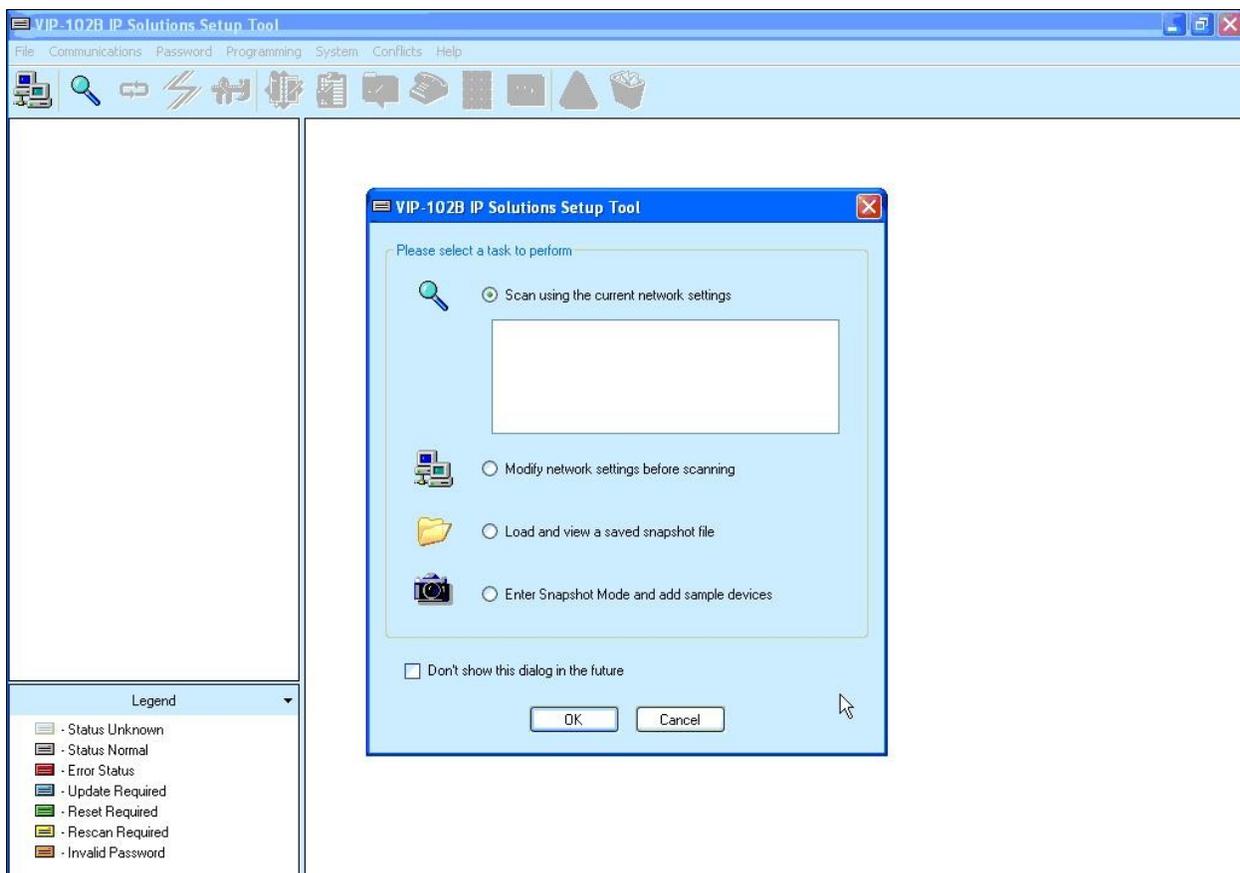
## 5. Configure Valcom VIP-201 PagePro IP

This section provides the procedures for configuring the Valcom VIP-201 PagePro IP device. The procedures include the following areas:

- Launch setup tool
- Administer properties
- Administer network
- Administer group membership
- Administer SIP

### 5.1. Launch Setup Tool

From a PC running the Valcom VIP-102B IP Solutions Setup Tool application, select **Start > All Programs > Valcom IP Solutions > VIP-102B IP Solutions Setup Tool**. The **VIP-102B IP Solutions Setup Tool** screen is displayed. Retain the default values and click **OK** to scan for Valcom devices.

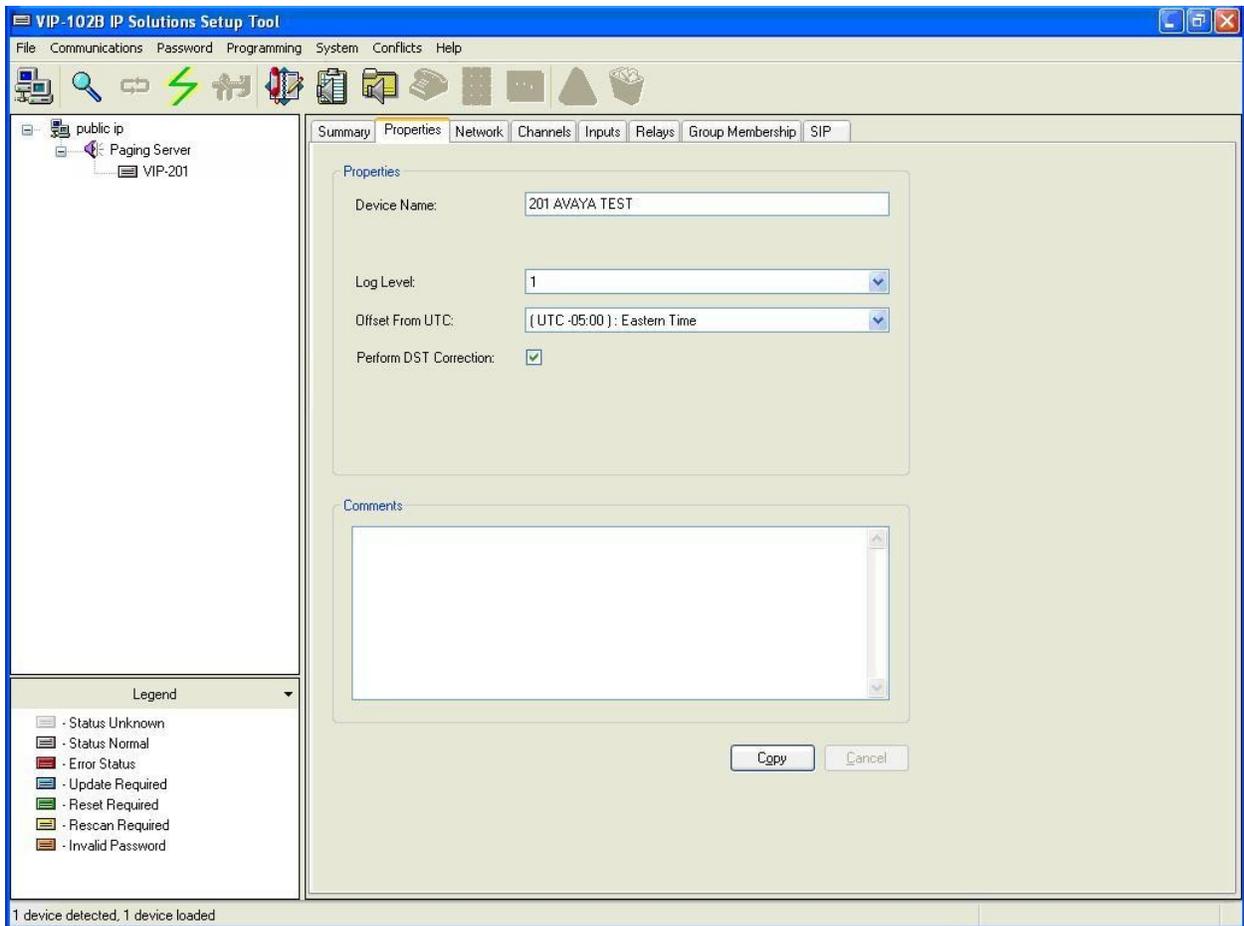


At the conclusion of the scan, the **VIP-102B IP Solutions Setup Tool** screen is updated with the discovered VIP-201 PagePro IP device, shown below as **VIP-201**.



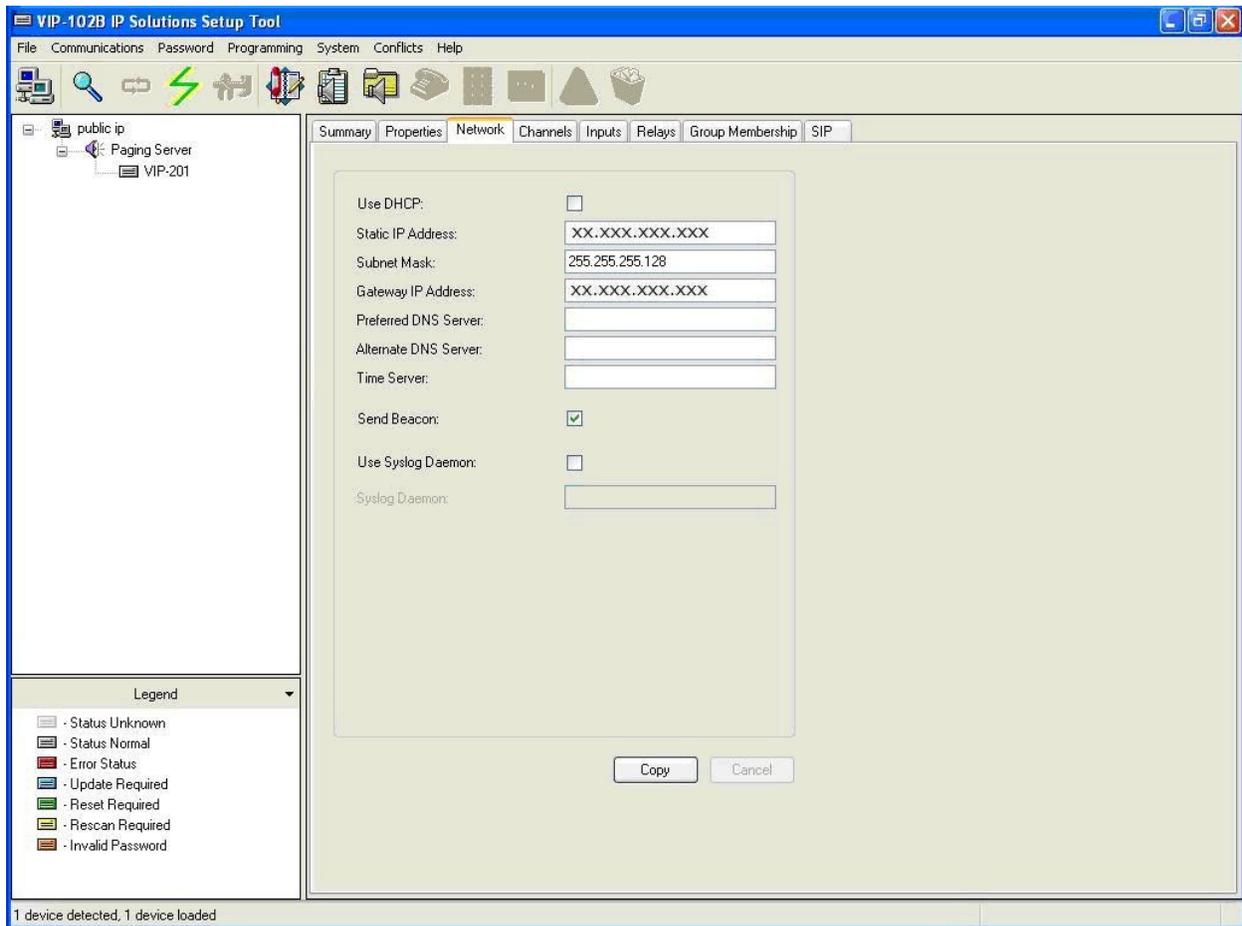
## 5.2. Administer Properties

Select **VIP-201** from the left pane, to display the configuration tabs in the right pane. Select the **Properties** tab, and enter a descriptive **Device Name**. Select the appropriate time zone in the **Offset From UTC** field, and enter any desired **Comments**.



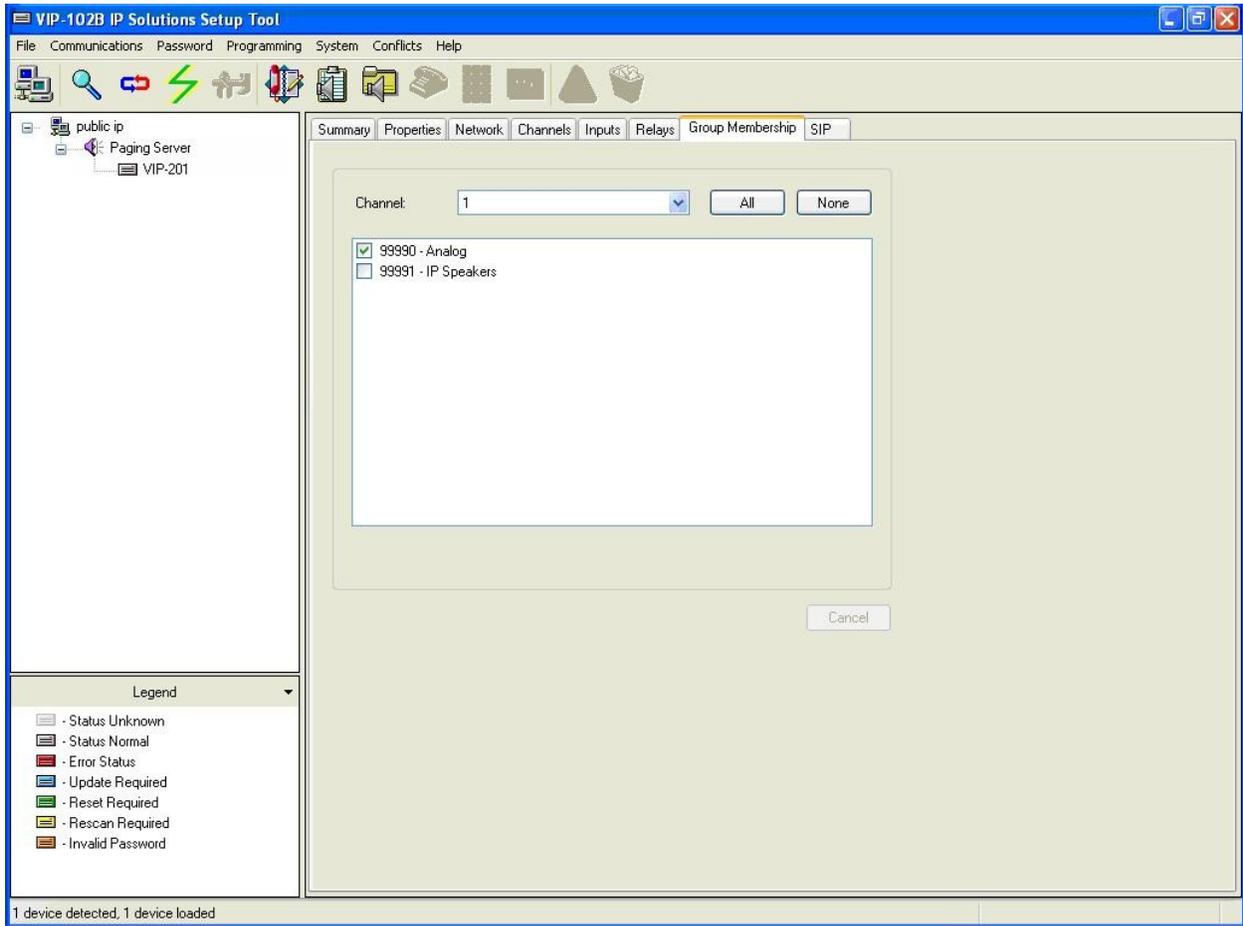
### 5.3. Administer Network

Select the **Network** tab. Enter the proper values for **Static IP Address**, **Subnet Mask**, and **Gateway IP Address** fields for the network configuration. Retain the default values in the remaining fields. Note that the IP addresses are masked in the screen below for privacy.



## 5.4. Administer Group Membership

Select the **Group Membership** tab. Follow the appropriate documentation in **Section 10** to create the applicable speaker groups. For the compliance testing, one analog and one IP speaker groups were configured as shown below.

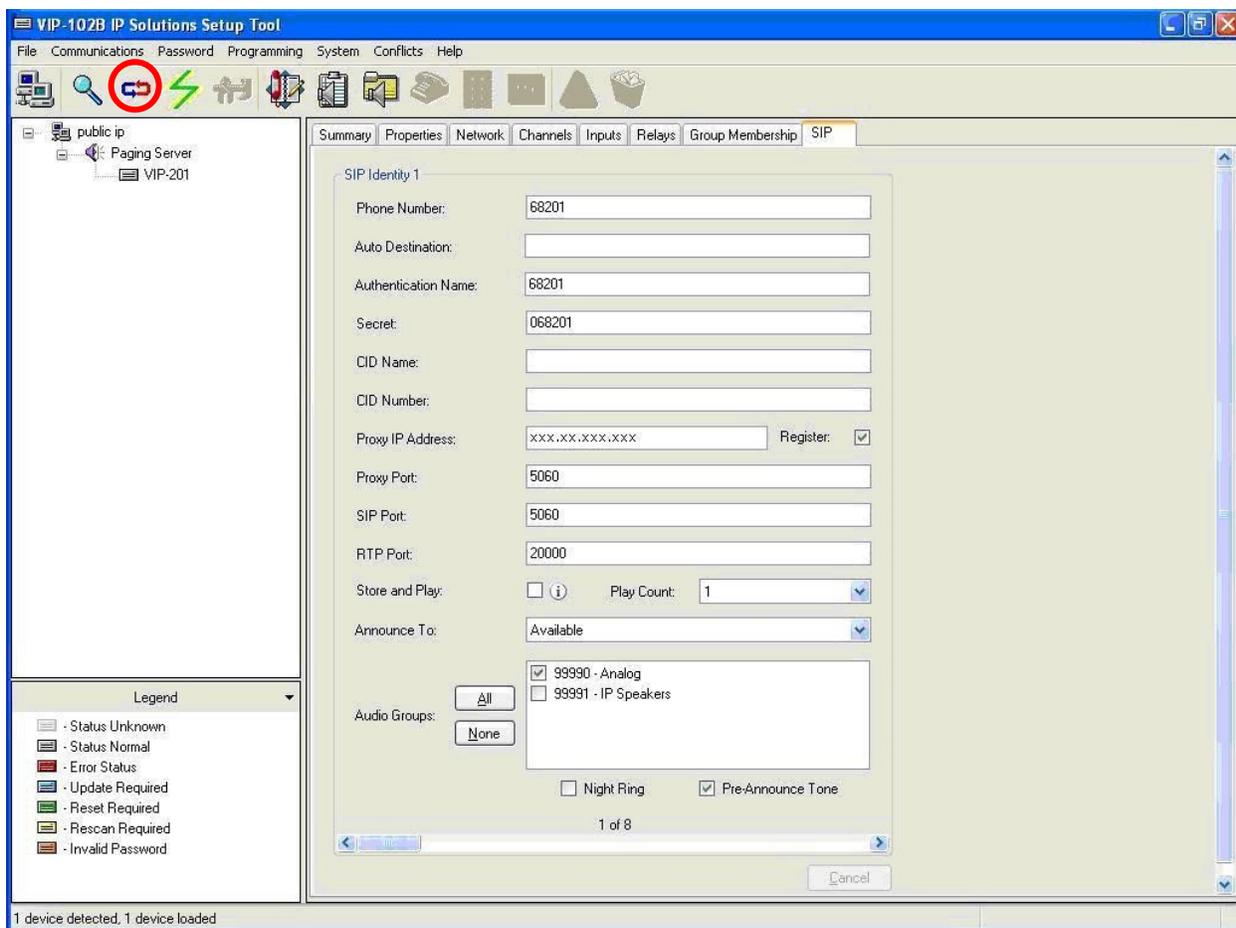


## 5.5. Administer SIP

Select the **SIP** tab to display the **SIP Identity 1** screen. Enter the following values for the specified fields, and retain the default values for the remaining fields. Note that the IP address is masked in the screen shot below for privacy, and that the **Store and Play** feature has to be unchecked.

- **Phone Number:** The first SIP user primary handle from **Section 4.2**.
- **Authentication Name:** The first SIP user primary handle from **Section 4.2**.
- **Secret:** The first SIP user password from **Section 4.2**.
- **Proxy IP Address:** The IP address of the Avaya SES server.
- **Register:** Check this field.
- **Audio Groups:** Select the desired group(s) of speakers to connect.

Move the slide toward the bottom of the screen to the right to administer **SIP Identity 2** (not shown), and use the credentials for the second SIP user from **Section 4.2**. Repeat this section to administer all eight SIP identities.



## 6. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing included registration, basic call, display, media shuffling, audio codec, and simultaneous call scenarios.

The serviceability testing focused on verifying the ability of the Valcom VIP-201 PagePro IP device to recover from adverse conditions, such as disconnect and reconnect of the Ethernet cable to the device.

### 6.1. General Test Approach

The feature test cases were performed manually. The various SIP access numbers for the Valcom VIP-201 PagePro IP device were dialed to test connection to the proper speaker groups.

The serviceability test cases were performed manually by disconnecting and reconnecting the LAN cables to the Valcom VIP-201 PagePro IP device.

### 6.2. Test Results

All feature test cases were executed. The following are the observations from the compliance testing:

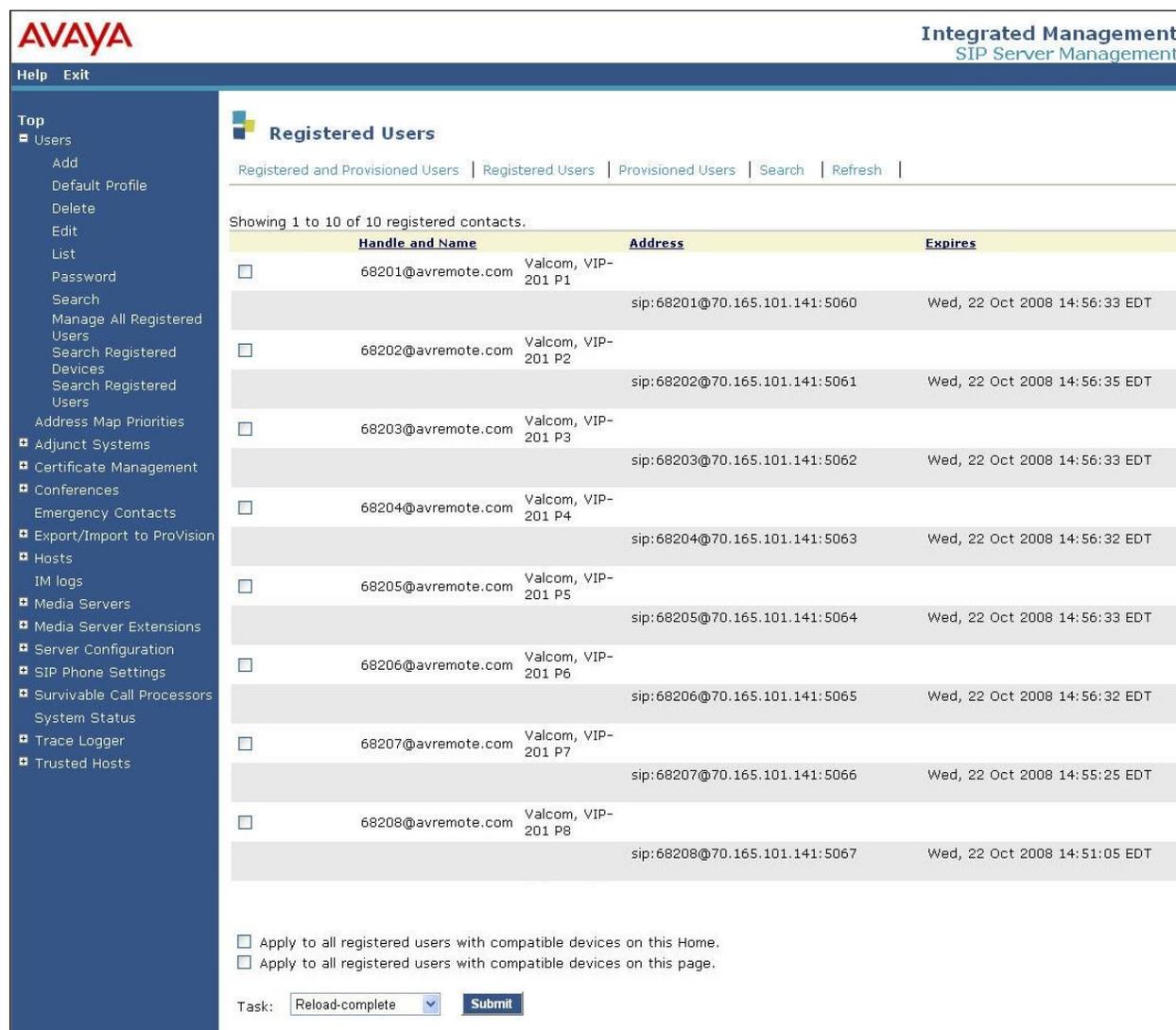
- Direct media shuffling has to be disabled in **Section 3.4**.
- The Store and Play feature has to be disabled in **Section 5.5**.

## 7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Communication Manager, Avaya SES, and Valcom VIP-201 PagePro IP.

### 7.1. Verify Avaya Communication Manager and Avaya SES

On Avaya SES, verify the registration status of the Valcom VIP-201 PagePro IP by selecting **Users > Search Registered Users** from the left pane. Verify that all SIP stations from **Section 3.2** are listed as registered users.



The screenshot displays the Avaya Integrated Management SIP Server Management interface. The left sidebar contains a navigation menu with options such as 'Users', 'Add', 'Default Profile', 'Delete', 'Edit', 'List', 'Password', 'Search', 'Manage All Registered Users', 'Search Registered Devices', 'Search Registered Users', 'Address Map Priorities', 'Adjunct Systems', 'Certificate Management', 'Conferences', 'Emergency Contacts', 'Export/Import to ProVision', 'Hosts', 'IM logs', 'Media Servers', 'Media Server Extensions', 'Server Configuration', 'SIP Phone Settings', 'Survivable Call Processors', 'System Status', 'Trace Logger', and 'Trusted Hosts'. The main content area is titled 'Registered Users' and shows a table of 10 registered contacts. The table has columns for 'Handle and Name', 'Address', and 'Expires'. Below the table, there are two checkboxes for applying actions to all registered users with compatible devices on this Home or page. At the bottom, there is a 'Task' dropdown menu set to 'Reload-complete' and a 'Submit' button.

	Handle and Name	Address	Expires
<input type="checkbox"/>	68201@avremote.com Valcom, VIP-201 P1	sip:68201@70.165.101.141:5060	Wed, 22 Oct 2008 14:56:33 EDT
<input type="checkbox"/>	68202@avremote.com Valcom, VIP-201 P2	sip:68202@70.165.101.141:5061	Wed, 22 Oct 2008 14:56:35 EDT
<input type="checkbox"/>	68203@avremote.com Valcom, VIP-201 P3	sip:68203@70.165.101.141:5062	Wed, 22 Oct 2008 14:56:33 EDT
<input type="checkbox"/>	68204@avremote.com Valcom, VIP-201 P4	sip:68204@70.165.101.141:5063	Wed, 22 Oct 2008 14:56:32 EDT
<input type="checkbox"/>	68205@avremote.com Valcom, VIP-201 P5	sip:68205@70.165.101.141:5064	Wed, 22 Oct 2008 14:56:33 EDT
<input type="checkbox"/>	68206@avremote.com Valcom, VIP-201 P6	sip:68206@70.165.101.141:5065	Wed, 22 Oct 2008 14:56:32 EDT
<input type="checkbox"/>	68207@avremote.com Valcom, VIP-201 P7	sip:68207@70.165.101.141:5066	Wed, 22 Oct 2008 14:55:25 EDT
<input type="checkbox"/>	68208@avremote.com Valcom, VIP-201 P8	sip:68208@70.165.101.141:5067	Wed, 22 Oct 2008 14:51:05 EDT

### 7.2. Verify Valcom VIP-201

Make a call to one of the SIP access number for the Valcom VIP-201 PagePro IP device, verify that the caller hears a pre-announce tone, and is connected to the appropriate speaker group from **Section 5.5** with one-way talk path.

## 8. Support

Technical support on Valcom VIP-201 PagePro IP can be obtained through the following:

- **Phone:** (800) VALCOM1
- **Email:** [tsupport@valcom.com](mailto:tsupport@valcom.com)

## 9. Conclusion

These Application Notes describe the configuration steps required for the Valcom VIP-201 PagePro IP to successfully interoperate with Avaya Communication Manager using Avaya SES.

All feature and serviceability test cases were completed with observations listed in **Section 6.2**.

## 10. Additional References

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

- *Administrator Guide for Avaya Communication Manager*, Document 03-300509, Issue 4.0, Release 5.0, January 2008, available at <http://support.avaya.com>.
- *Installing, Administering, Maintaining, & Troubleshooting SIP Enablement Services*, Document 03-600768, Issue 5.0, January 2008, available at <http://support.avaya.com>.
- *SIP Support in Avaya Communication Manager Running on Avaya S8xxx Servers*, Document 555-245-206, Issue 8, January 2008, available at <http://support.avaya.com>.
- *PagePro IP SIP Based Paging Server*, available at <http://www.valcom.com>.

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