Avaya Solution & Interoperability Test Lab

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.

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1 of 20
Valcom-201-SES

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.
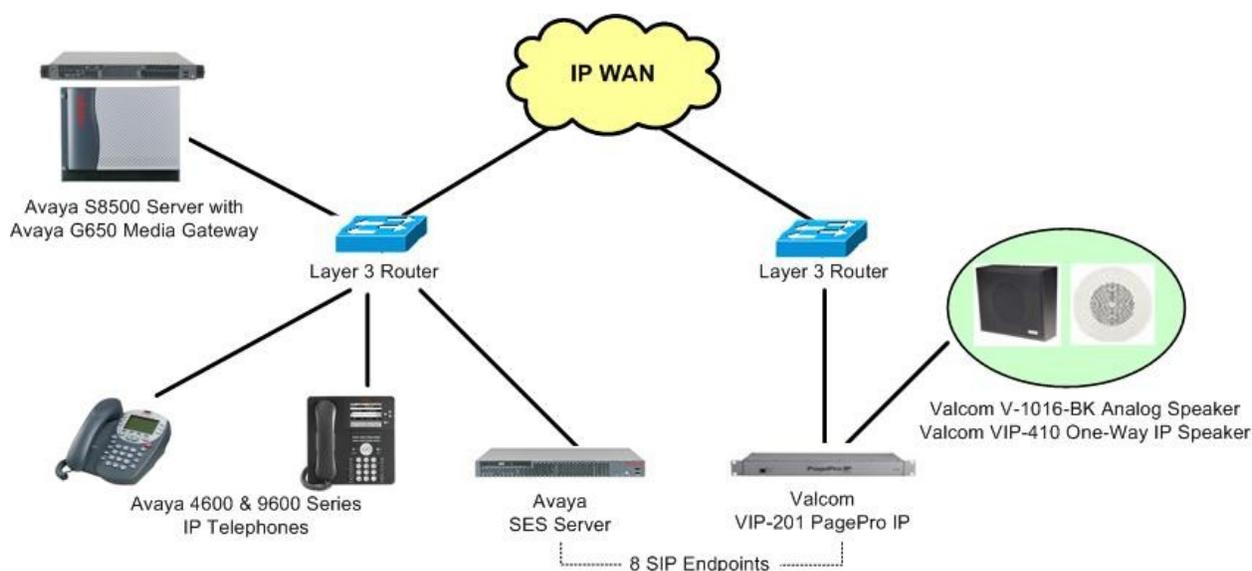

Figure 1: Valcom VIP-201 PagePro IP with Avaya Communication Manager using Avaya SES

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 • TN799DP C-LAN Circuit Pack	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
                                       Time of Day Lock Table:
             Loss Group: 2      Personalized Ringing Pattern: 1
            Data Module? n                 Message Lamp Ext: 68201
           Speakerphone: 2-way          Mute Button Enabled? y
       Display Language: english

        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                    1
               6408D+                    no                      1
68202          X       Valcom VIP-201 P2                    1
               6408D+                    no                      1
68203          X       Valcom VIP-201 P3                    1
               6408D+                    no                      1
68204          X       Valcom VIP-201 P4                    1
               6408D+                    no                      1
68205          X       Valcom VIP-201 P5                    1
               6408D+                    no                      1
68206          X       Valcom VIP-201 P6                    1
               6408D+                    no                      1
68207          X       Valcom VIP-201 P7                    1
               6408D+                    no                      1
68208          X       Valcom VIP-201 P8                    1
               6408D+                    no                      1
```

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          Application Dial   CC  Phone Number     Trunk       Config
 Extension                    Prefix                      Selection   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          Appl   CC   Phone Number    Config Trunk   Mapping     Calls
Extension                                    Set    Select  Mode        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.

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8 of 20
Valcom-201-SES

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

The **Top** screen is displayed next.

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.

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

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.

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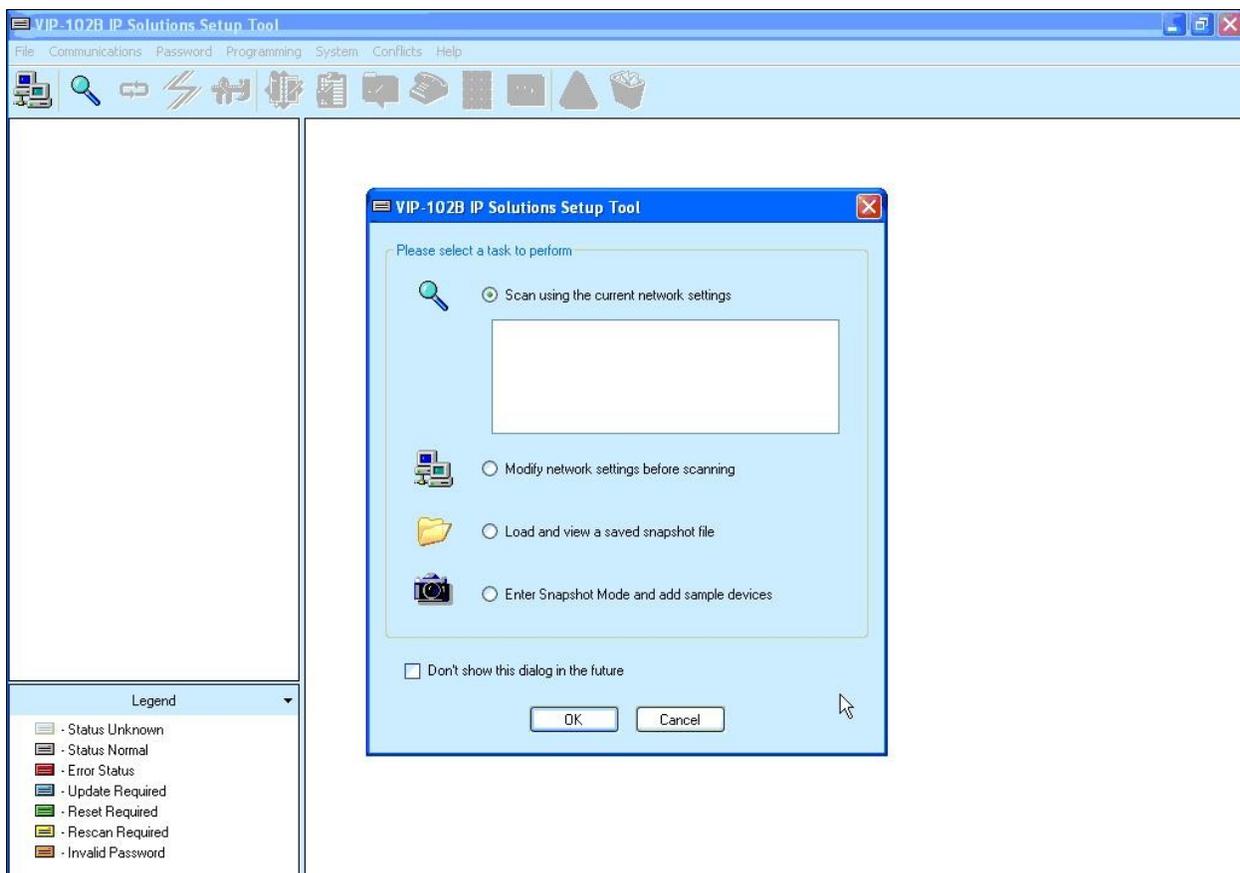
At the conclusion of the scan, the **VIP-102B IP Solutions Setup Tool** screen is updated with the discovered VIP-201 PagePro IP device, shown below as **VIP-201**.

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**.
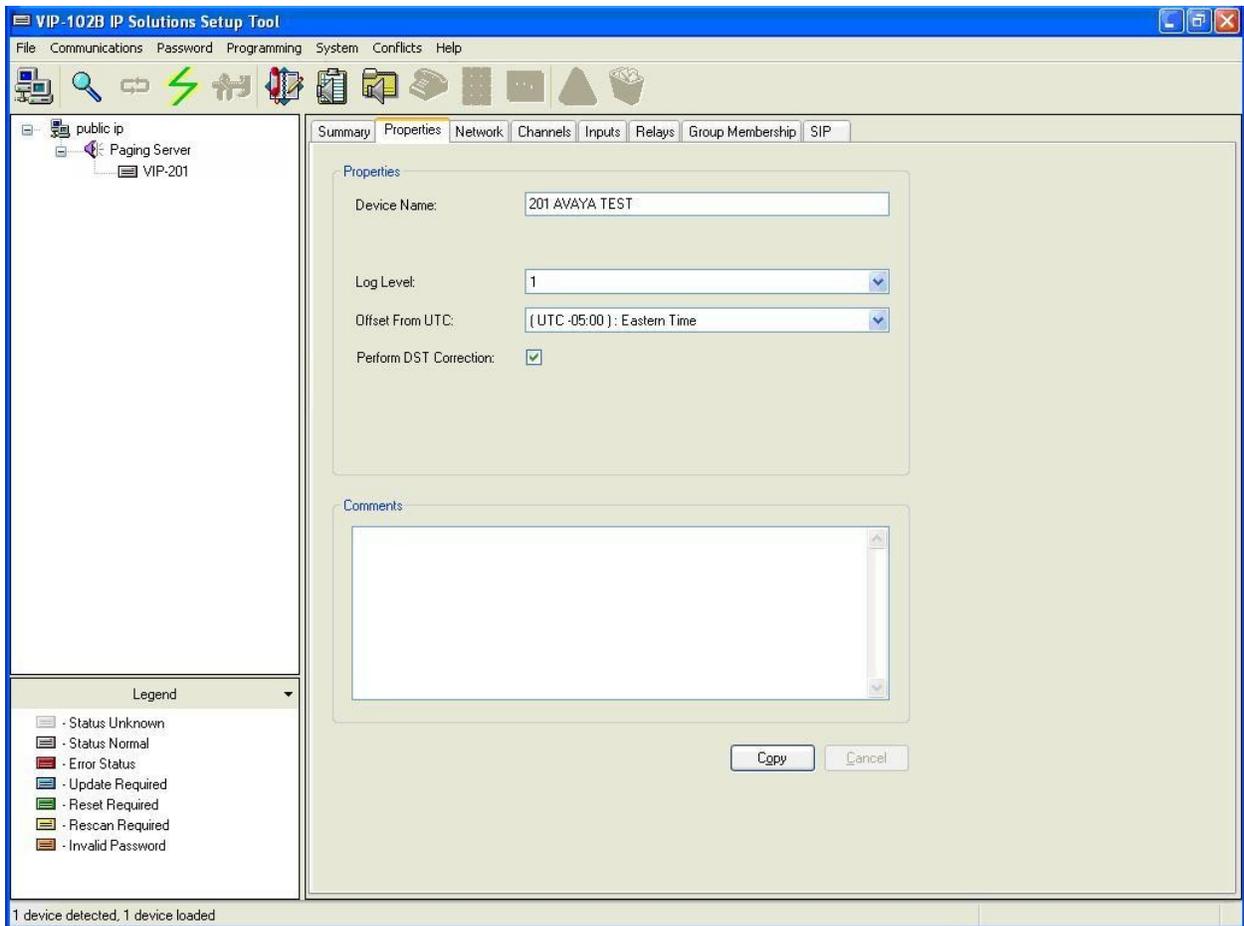
5.3. Administer Network

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.
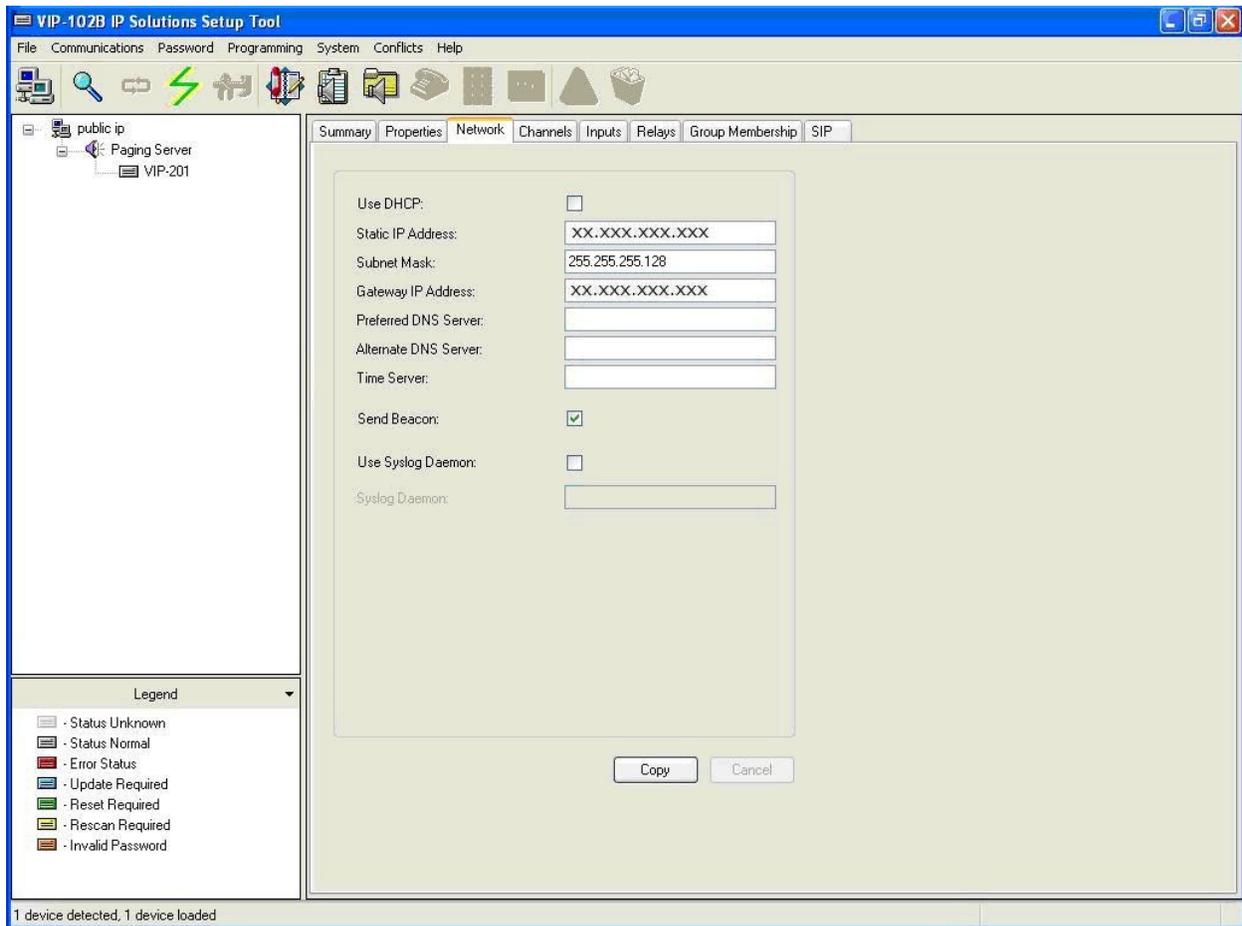
5.4. Administer Group Membership

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.
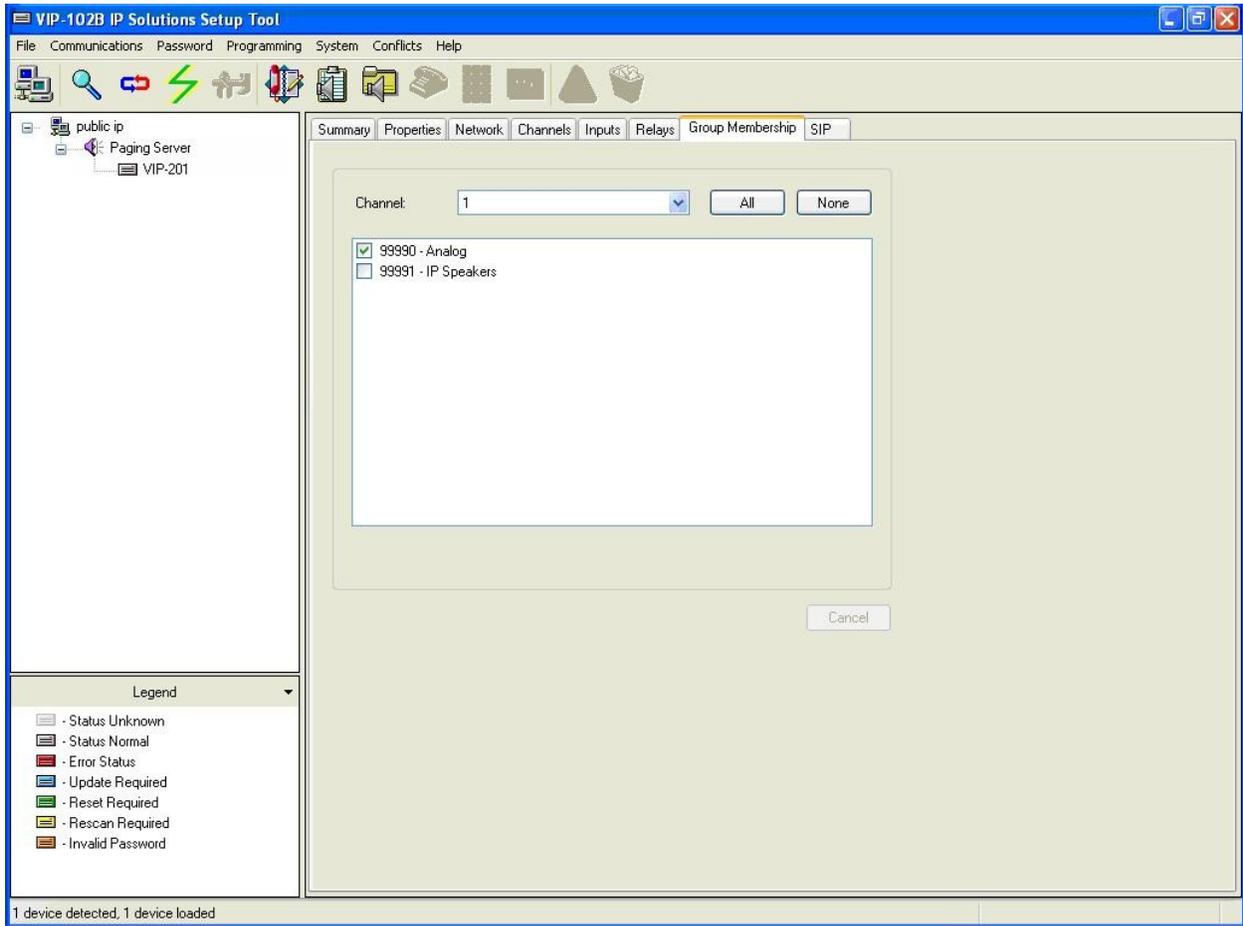
5.5. Administer SIP

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.
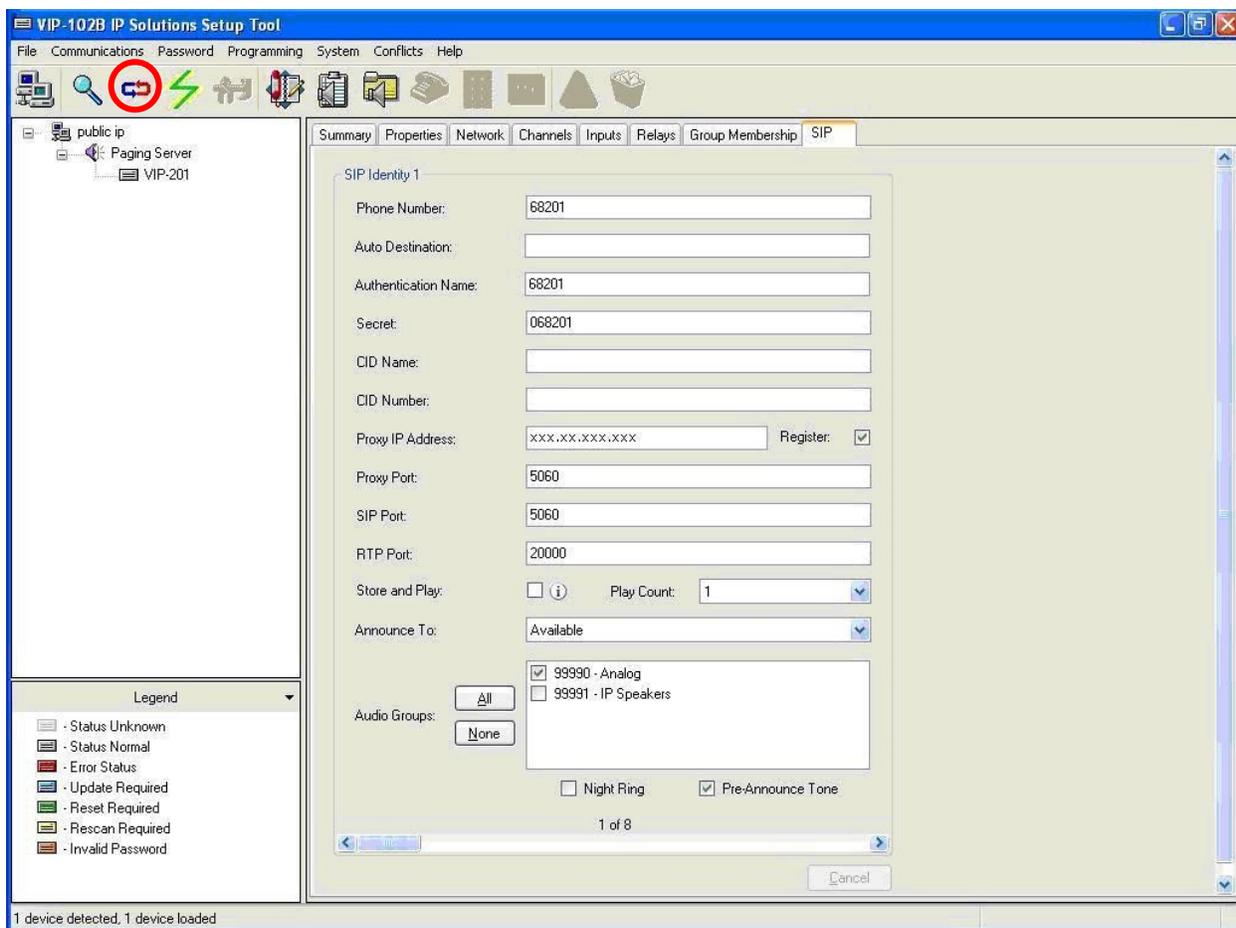
6. Interoperability Compliance Testing

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.

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

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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