



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

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# **Application Notes for Valcom VE6023 Telephone Page Server with Avaya IP Office – Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps required for Valcom VE6023 Telephone Page Server to successfully interoperate with Avaya IP Office. The VE6023 Telephone Page Server extends the functionality of an IP phone system allowing it to integrate seamlessly with an overhead paging system. The VE6023 allows pages from other Valcom devices to play on Avaya 9600 series IP desk phones using H323 firmware, essentially turning those phones in to additional IP speakers.

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 VE6023 Telephone Page Server to successfully interoperate with Avaya IP Office. The Valcom VE6023 Telephone Page Server provides a bridge between Valcom IP Mass Notification systems and Avaya IP Office telephones.

The VE6023 retransmits Valcom IP paging audio to Avaya 9600 series IP Deskphone H323 Firmware sets, and thus requires additional equipment to be the source of the paging audio. This could be a Valcom analog adapter from a station or trunk port, a Valcom application server or a Valcom PagePro IP SIP gateway. This equipment would likely already be in production use at a customer's site. For the Avaya compliance test, a VIP-201 PagePro IP will be provided with basic programming already setup.

## 2. General Test Approach and Test Results

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.

### 2.1. Interoperability Compliance testing

The interoperability compliance test plan included feature and serviceability test cases.

The feature testing covered Avaya Phones registering to PUSH Servers, multicast audio push function, basic pages, simultaneous pages, display verification and audio codec negotiation. Various SIP access numbers for the Valcom PagePro IP device were dialed to test connection to the proper speaker and Avaya H.323 telephone groups.

The serviceability testing focused on verifying the ability of the Valcom Telephone Page Server to recover from adverse conditions, such as disconnecting and reconnecting the Ethernet cable to the device, and rebooting Avaya IP Office.

### 2.2. Test Results

All feature and serviceability test cases were completed successfully. Valcom VE6023 successfully interoperates with Avaya IP Office.

### 2.3. Support

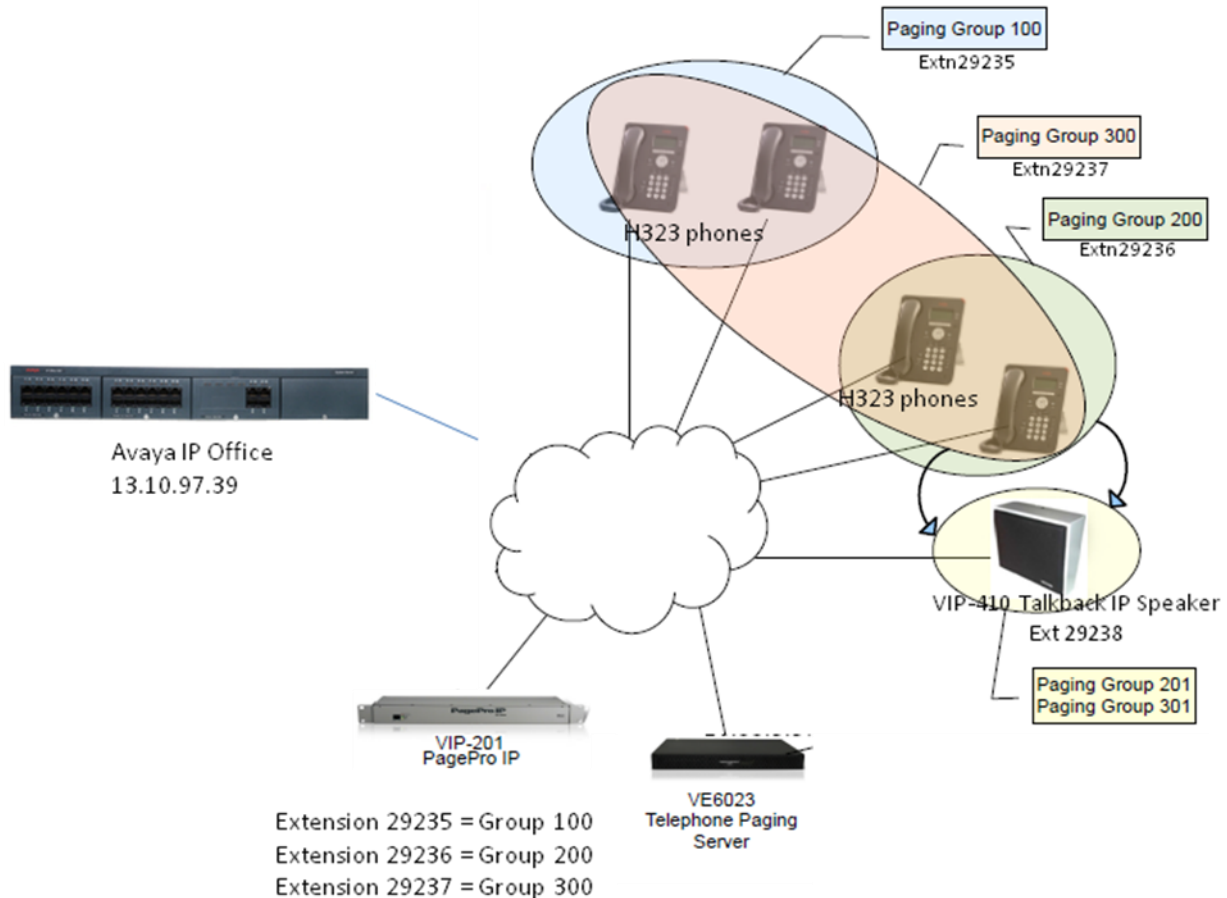
Technical support for Valcom can be obtained through the following:

- **Phone:** (800) VALCOM1
- **Email:** support@valcom.com

### 3. Reference Configuration

The VE6023 allows pages from Valcom VIP-201 Page IP Pro devices to play on Avaya IP desk phones, essentially turning those phones in to additional IP speakers.

During compliance testing, the following configuration was used:



**Figure 1: Valcom Telephone Page Server with Avaya IP Office**

## 4. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office 500	8.1(63)
Avaya IP Office Manager (Windows PC)	10.1 (63)
Avaya 9611 IP Deskphone Avaya 9608, 9630 IP Deskphones	96x1-IPT-H323-R6_2_2_09-071012 96xx-IPT-H323-R3_1_5-092612
Valcom VIP-201 PagePro IP	2.19.0 Startup Rev 1.42
Valcom VIP-410 Talkback IP Speakers	2.20.0 Startup Rev 1.17
Valcom VE6023 Telephone Page Server	4.0.2-6c3665f Platform Rev 2.11
VIP-102B Tool	4.1.0.0

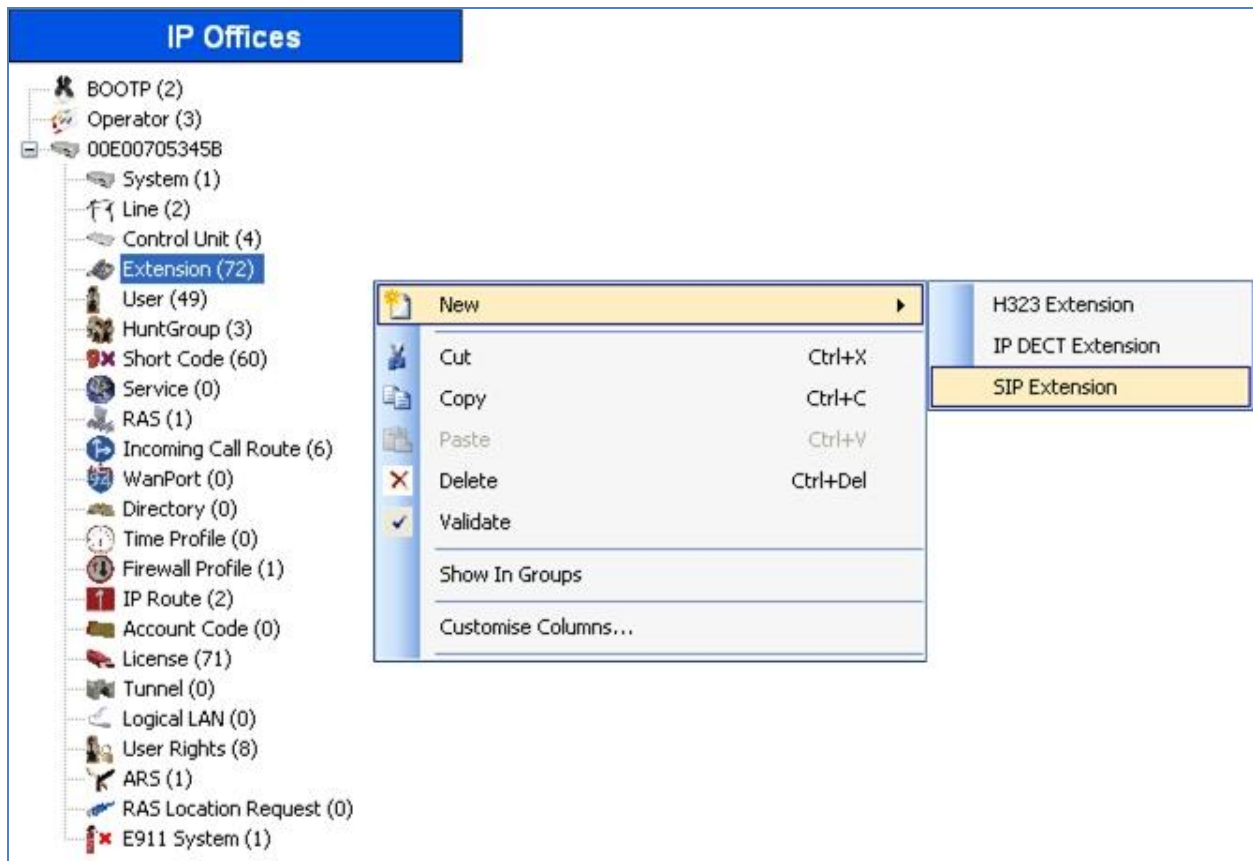
## 5. Configure Avaya IP Office

This section describes the steps required to configure SIP/H.323 extensions and users on IP Office for IP Speaker Phone, PagePro IP Access Number and H.323 Phones. The SIP configuration steps for the Valcom PagePro IP and IP Speaker are included for completeness of this documentation. A Valcom paging source is required, but may be any of the Valcom IP paging sources.

IP Office is configured via the IP Office Manager program. Log into the IP Office Manager PC and select **Start → Programs → IP Office → Manager** to launch the Manager application. Log into the IP Office Manager application using the appropriate credentials.

### 5.1. Administer SIP Extensions

Create a SIP extension. Right-click on **Extension** in the left panel menu and select **New → SIP Extension**.



On the **Extn** tab, enter a valid **Base Extension**.

The screenshot shows the 'SIP Extension: 8008 29235' configuration window with the 'Extn' tab selected. The 'Base Extension' field is highlighted with a red box and contains the value '29235'. Other fields include 'Extension Id' (8008), 'Caller Display Type' (On), 'Reset Volume After Calls' (checkbox), 'Device Type' (Unknown SIP device), 'Module' (0), 'Port' (0), and 'Force Authorization' (checked).

On the **VoIP** tab, add **G.711 ULAW 64K** to the **Selected** codec list and select **RFC2833** for **DTMF Support**. Make sure **Allow Direct Media Path** is selected.

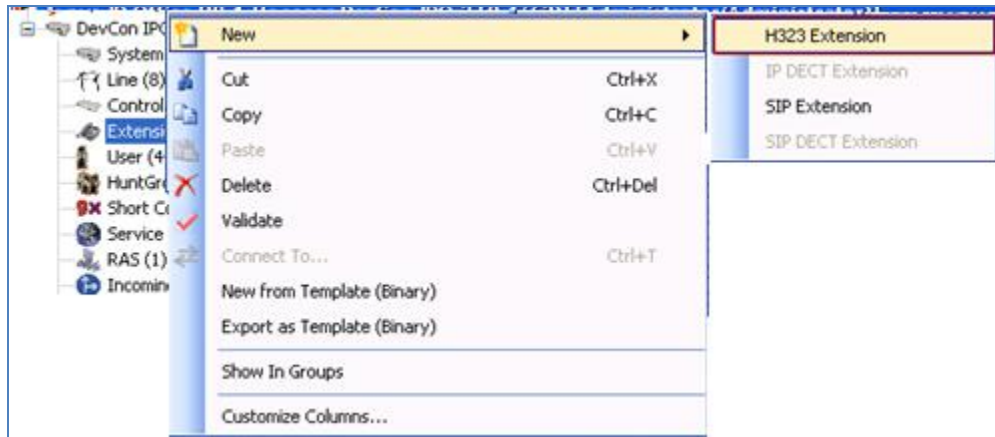
The screenshot shows the 'SIP Extension: 8008 29235' configuration window with the 'VoIP' tab selected. The 'Selected' codec list is highlighted with a red box and contains 'G.711 ULAW 64K', 'G.729(a) 8K CS-ACELP', and 'G.722 64K'. The 'DTMF Support' dropdown is also highlighted with a red box and set to 'RFC2833'. Other settings include 'Allow Direct Media Path' (checked), 'Re-invite Supported' (checked), and 'IP Address' (0.0.0.0).

Click the **OK** button on the bottom of the screen (not shown).

## 5.2. Administer H.323 Extension

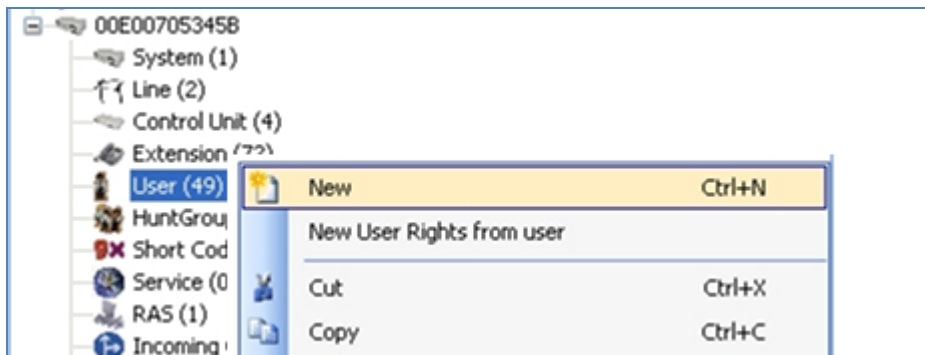
The VE6023 uses the multicast push feature built into Avaya IP phones. At the time of this writing only Avaya 9600 Series IP Deskphones support this feature, and only when using H.323 call control. This section describes steps to create an H.323 extension for paging.

Right-click on **Extension** in the left panel menu and select **New → H323 Extension**.



## 5.3. Administer Users

Create a User for Extensions that created in **Section 5.1** and **5.2**. Right-click **User** from the left panel then selects **New**.



Under the **User** tab, enter the values below for the specified fields, and retain the default values in the remaining fields.

- **Name** Enter a desired name. This name will be used in **Section 6.4**.
- **Full Name** Enter a descriptive name.
- **Extension** Enter the extension configured in **Section 5.1**.

The screenshot shows a web-based configuration interface for a user. The title bar reads "Extn29235 : 29235\*". The "User" tab is active. The form contains the following fields and values:

Field	Value
Name	Extn29235
Password	****
Confirm Password	****
Full Name	PM29235
Extension	29235
Email Address	
Locale	
Priority	5
System Phone Rights	None
Profile	Basic User
Receptionist	<input type="checkbox"/>
Enable Softphone	<input type="checkbox"/>
Enable one-X Portal Services	<input checked="" type="checkbox"/>
Enable one-X TeleCommuter	<input type="checkbox"/>
Enable Remote Worker	<input checked="" type="checkbox"/>
Enable Flare	<input type="checkbox"/>
Flare Mode	Standalone

Buttons at the bottom: OK, Cancel, Help.



Under the **Telephony** → **Supervisor Settings** tab, enter a value for the specified field below, and retain the default values in the remaining fields.

- **Login Code** Enter the desired login code. This code will be used in **Section 6.4**.

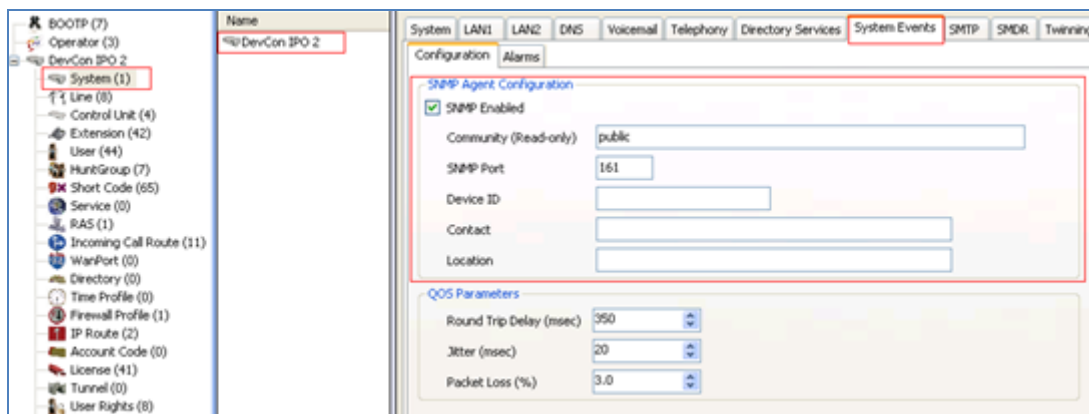
The screenshot shows the configuration window for Extn29235. The 'Supervisor Settings' tab is selected. The 'Login Code' field is highlighted with a red box and contains '\*\*\*\*'. Other fields include 'Login Idle Period (secs)', 'Monitor Group', 'Coverage Group', 'Status on No-Answer', 'Reset Longest Idle Time' (with 'All Calls' selected), and 'After Call Work Time (secs)'. A list of checkboxes on the right includes 'Force Login', 'Force Account Code', 'Force Authorization Code', 'Outgoing Call Bar', 'Inhibit Off-Switch Forward/Transfer', 'Can Intrude', 'Cannot be Intruded' (checked), 'Can Trace Calls', 'CCR Agent', 'Automatic After Call Work', and 'Deny Auto Intercom Calls'. Buttons for 'OK', 'Cancel', and 'Help' are at the bottom.

Click the **OK** button on the bottom of the screen. Repeat the procedures in **Sections 5.1** and **5.3** for each PagePro IP Access Numbers and **Extn29338** for the VIP-410 Valcom IP Speaker Phone.

## 5.4. Setup System Event

The VE6023 uses SNMP to scan the Avaya server for information on the phones. Before the VE6023 can discover the IP phones on the network, the phone system must be configured to allow the VE6023 access. Follow the instructions for the configuration on IP Office before configuring the VE6023. Select **System** → **System Events**, in **SNMP Agent Configuration** section:

- **SNMP Enable**: checked.
- **Community (Read-only)**: Enter **public**. This value will be used in **Section 6.5.1**.



## 5.5. Setup 46xxsetting file

The VE6023 uses Avaya's push feature to stream audio to IP desk phones. To authorize the VE6023 as a Trusted Push Server, the URL from the VE6023 must be added to the 46xxsettings.txt file. The URL is composed of the IP address of the VE6023 server and the port configured in the VE6023 setup. The default port is 8989, but it can be changed. The URL will be in the form of "http://<ipaddress>:8989".



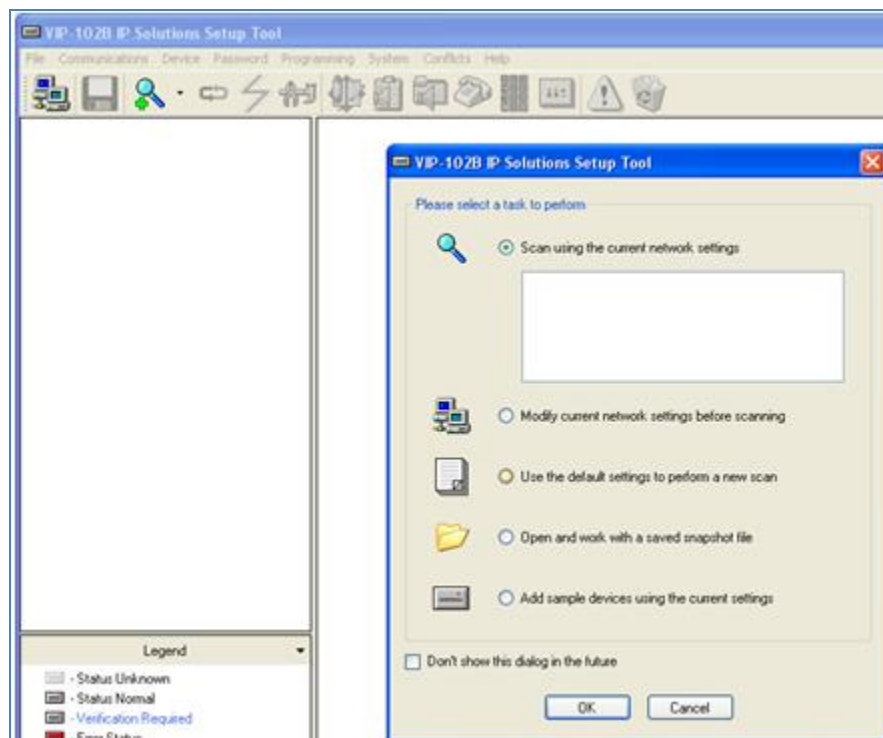
## 6. Configure Valcom devices

This section provides the procedures for configuring Valcom devices used during compliance test such as VIP-201 PagePro IP, VIP-410 IP Speaker and VE6023 Telephone Page Server. The information shown is the minimum for configuring the Valcom device. Complete configuration details may be found in the Valcom documentation listed in **Section 9**. The procedures include the following areas:

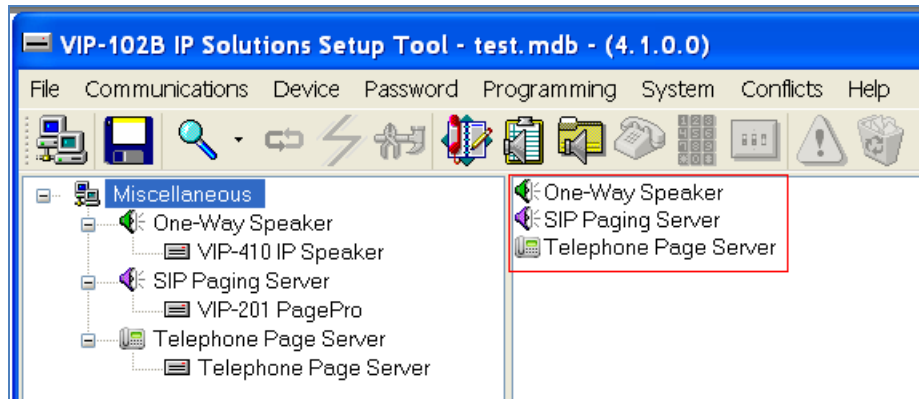
- Launch setup tool
- Administer properties
- Administer network
- Administer group membership
- Administer SIP
- Administer Telephone Page Server

### 6.1. 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.

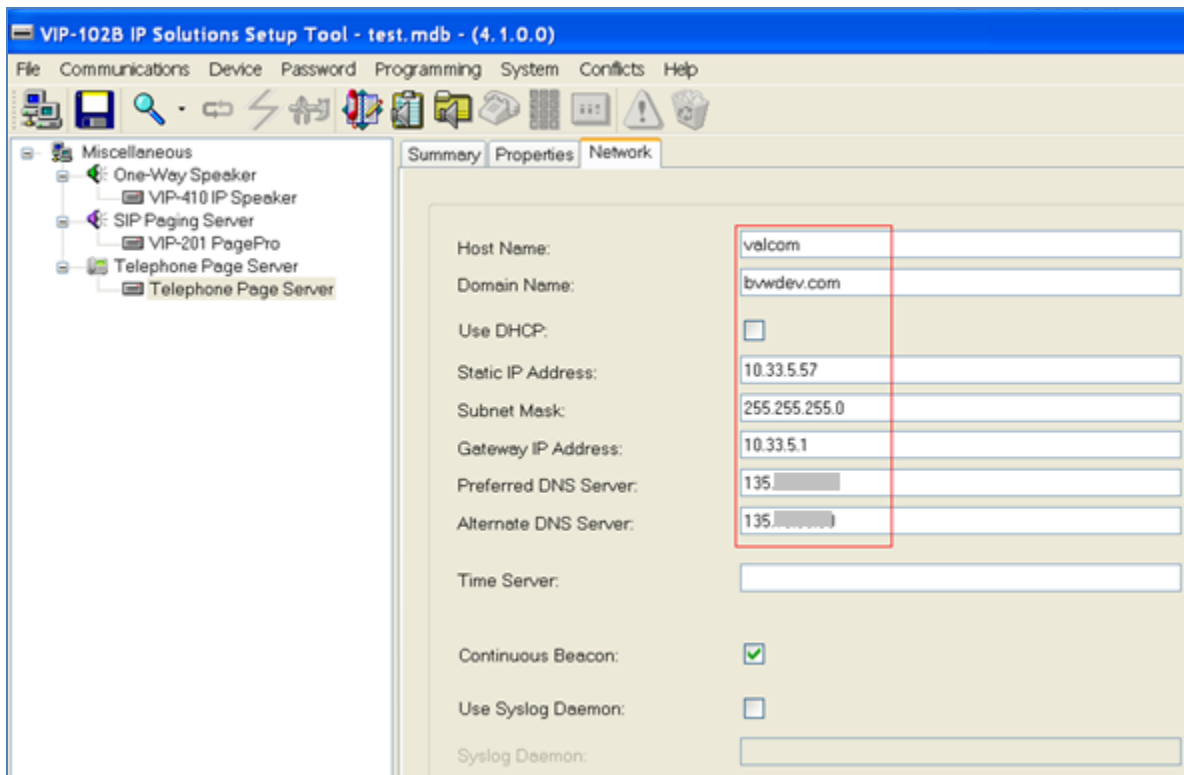


At the conclusion of the scan, the **VIP-102B IP Solutions Setup Tool** screen is updated with the discovered Valcom devices as shown below:



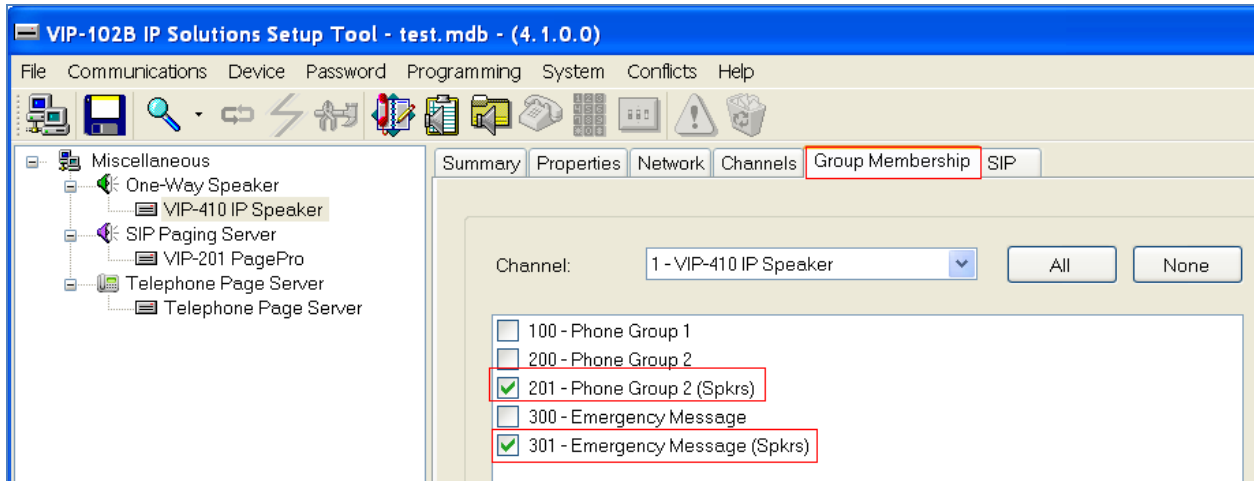
## 6.2. Administer Network

Select device and select the **Network** tab and enter the appropriate values. During compliance testing, a **Static IP Address**, **Subnet Mask**, and **Gateway IP Address** were populated for the network configuration. The default values in the remaining fields were retained. Below is the screenshot of network tab of Telephone Page Server.

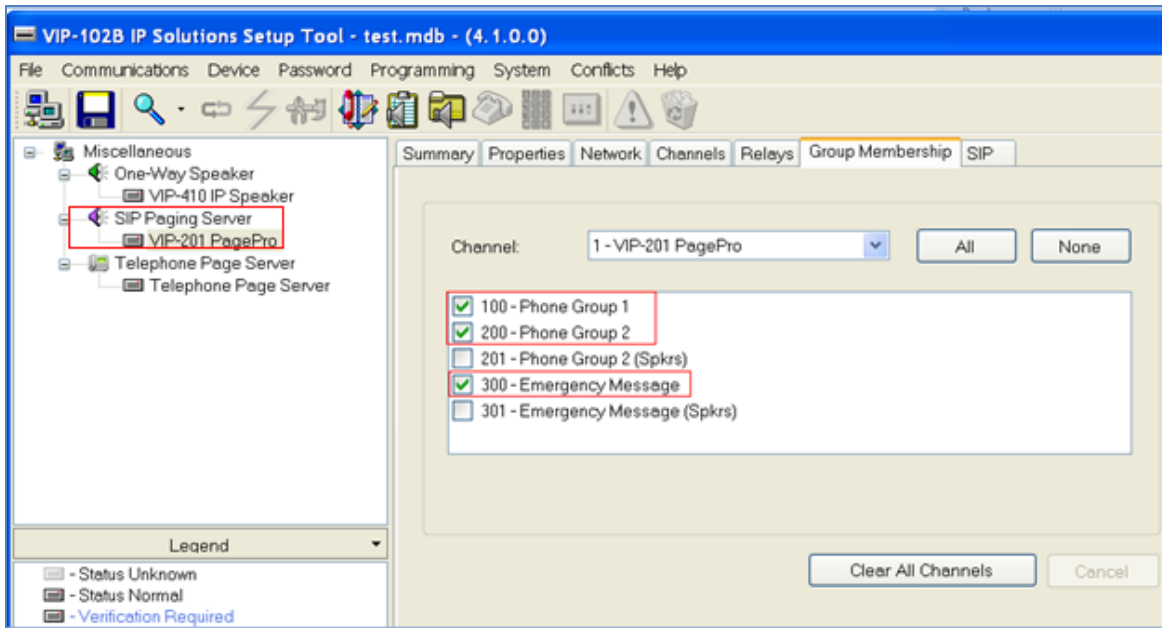


### 6.3. Administer Group Membership

Select the **Group Membership** tab. Follow the appropriate documentation in **Section 9** to create the applicable groups. Following is the groups assigned to **VIP-410 IP Speaker**.



Following figure is the list of groups assigned to **VIP-201 PagePro**:



## 6.4. Administer SIP

SIP configuration was required for the VIP-201 PagePro IP and VIP-410 IP Speaker that were used as part of the compliance testing. The steps noted here are for completeness of the compliance testing documentation. These steps are not required for the VE6023 Telephone Page Server.

### 6.4.1. Administer SIP for VIP-410 IP Speaker

Select the **SIP** tab of VIP-410 IP Speaker. Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Phone Number:** Enter the **Base Extension** from **Section 5.1**.
- **Authentication Name:** Enter the **Name** from **Section 5.3**.
- **Secret:** Enter the **Login Code** from **Section 5.3**.
- **SIP Server:** Enter the IP address of Avaya IP Office.
- **Register:** Check this field.

The screenshot shows the configuration interface for a VIP-410 IP Speaker. The SIP tab is selected, and the configuration fields are visible. Red boxes highlight the Phone Number (29238), Authentication Name (Extn29238), Secret (1234), SIP Server (Primary 130.1.1.100), SIP Port (5060), RTP Port (20000), and Register checkbox (checked).

Server	Port
Primary 130.1.1.100	5060
Backup 1	5060
Backup 2	5060
Backup 3	5060

## 6.4.2. Administer SIP for VIP-201 PagePro

Select the **SIP** tab of VIP-410 IP Speaker. Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Phone Number:** Enter the **Base Extension** from **Section 5.1**.
- **Authentication Name:** Enter the **Name** from **Section 5.3**.
- **Secret:** Enter the **Login Code** from **Section 5.3**.
- **SIP Server:** Enter the IP address of Avaya IP Office.
- **Register:** Check this field.
- **SIP Port:** **5060.**
- **Outbound Port:** **5060.**
- **RTP Port:** **20000.**
- **Pre-Announce Tone:** Checked this field.
- **Audio Group:** Check the selected group for SIP extension.

The following is an example of Extension 29235 is assigned to Group 1 on PagePro IP.

The screenshot displays the configuration page for a SIP extension in the Avaya IP Office software. The 'SIP' tab is selected, and the extension number '1' is highlighted in the top navigation bar. The configuration fields are as follows:

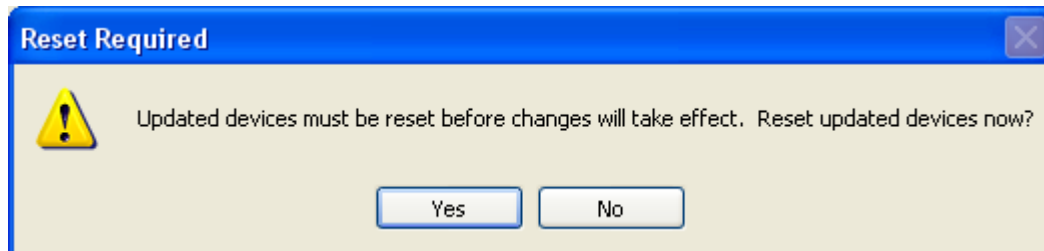
- Phone Number:** 29235
- Description:** (empty)
- Authentication Name:** Extn29235
- Secret:** 1234
- Realm:** (empty)
- SIP Servers:**

	Server	Port
Primary	13	5060
- Register:**
- Outbound Proxy:** (empty)
- Outbound Port:** 5060
- SIP Port:** 5060
- RTP Port:** 20000
- Night Ring:**
- Pre-Announce Tone:**  Store and Play:  Play Count: 1
- Audio Groups:**
  - 100 - Phone Group 1
  - 200 - Phone Group 2
  - 201 - Phone Group 2 (Spkrs)



Select tab **2** 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. During compliance test, only three extensions were configured on the PagePro IP.

Click on the **Update Changed Devices** icon circled above. The **Reset Required** dialog box will appear as shown below. Click **Yes** to reset the updated devices.



## 6.5. Administer Telephone Page Server

This section describes the steps to configure VE6023 through the web page.

The procedure includes the following areas:

- Configure Network Parameters.
- Configure Avaya Phones.
- Configure Address Pool.
- Configure Group Attachment.

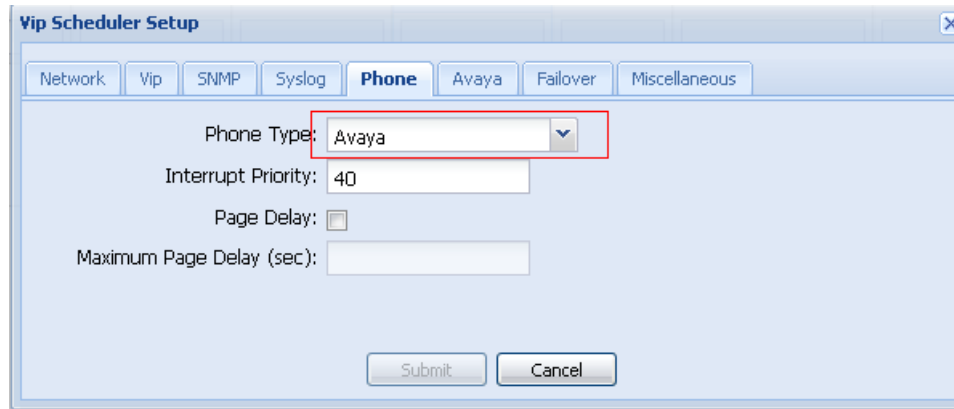
To access the web interface, log in to the system by entering its IP address in to a web browser, see **Section 6.2** for IP address of VE6023. The default username is 'admin' and the default password is '4cc3ss'. It is recommended that the default password be changed.

### 6.5.1. Configure Network Parameters

Access the **Setup** window by clicking the **Setup** item on the left-hand navigation panel. The **Setup** window consists of several tabs. Following is the Network tab of VE6023 during compliance test.



Select **Phone** tab, select **Avaya** for **Phone Type**. Click **Submit** to save changes.



Select **Avaya** tab:

- **Push Port:** **8989** is used during compliance test.
- **Name:** enter descriptive name.
- **Avaya Server IP:** enter IP address of Avaya IP Office.
- **SNMP Community String:** enter string created in **Section 5.4**.

Click **Submit** to save changes.

Vip Scheduler Setup

Groups Name Address Status Phone Model

Network Vip SNMP Syslog Phone **Avaya** Failover Miscellaneous

**General Settings**

Push Port: 8989

Add Server

**Avaya**

**Avaya Server Settings**

Name: IP Office

Avaya Server Type: IP Office

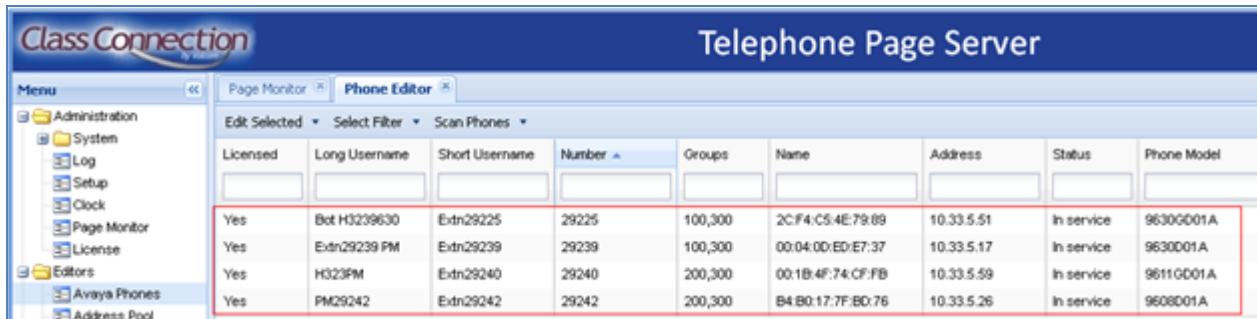
Avaya Server IP: 13

SNMP Community String: public

Submit Cancel

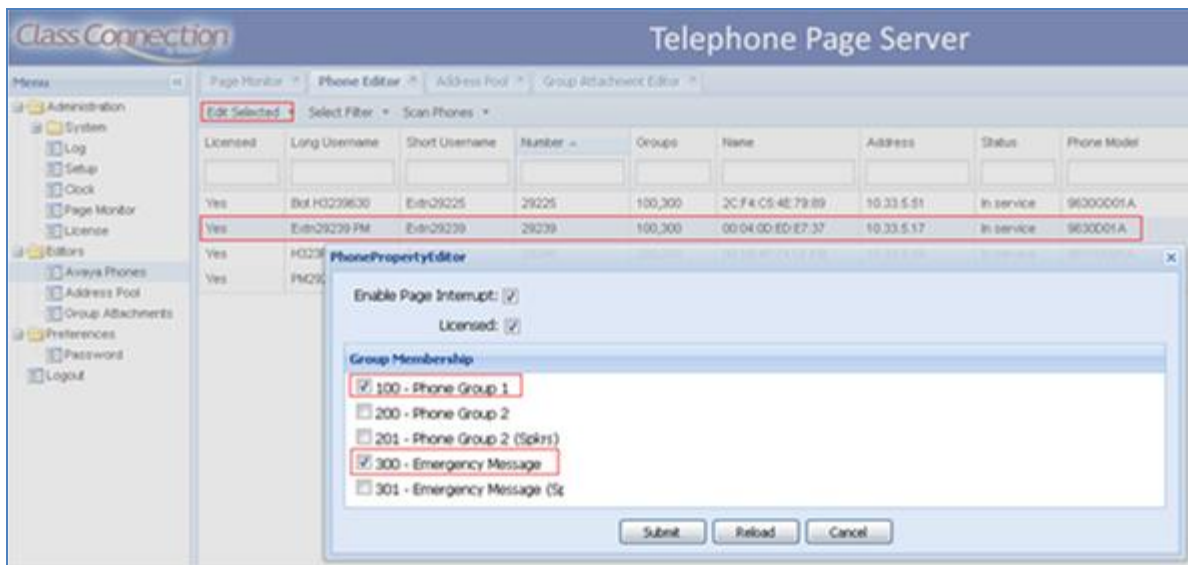
### 6.5.2. Configure Avaya Phone:

Select **Editors** → **Avaya Phones**, the Phone Editor provides a list of all the phones the VE6023 was able to discover in the network.



Licensed	Long Username	Short Username	Number	Groups	Name	Address	Status	Phone Model
Yes	Bot H3239630	Extn29225	29225	100,300	2C:F4:C5:4E:79:89	10.33.5.51	In service	9630G001A
Yes	Extn29239 PM	Extn29239	29239	100,300	00:04:0D:ED:E7:37	10.33.5.17	In service	9630D01A
Yes	H323PM	Extn29240	29240	200,300	00:1B:4F:74:CF:FB	10.33.5.59	In service	9611G001A
Yes	PM29242	Extn29242	29242	200,300	B4 B0:17:7F:BD:76	10.33.5.26	In service	9608D01A

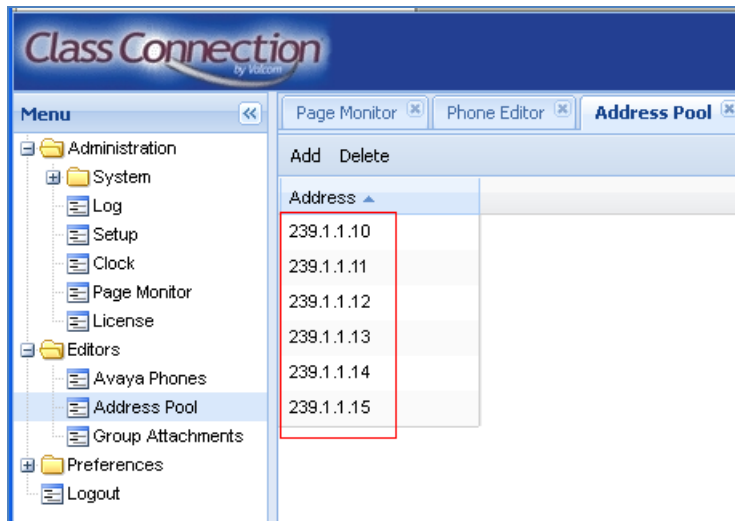
Double click on a phone to add phones to page groups, manage which phones are licensed, and control page interrupt settings for each phone. The following figure show that device with extension 29239 belongs to group 100, 300, is licensed and Page Interrupt is Enabled.



### 6.5.3. Configure Address Pool

The VE6023 streams audio to the IP phones using multicast. By default, the multicast address 239.1.1.10 is the only address used. This can be changed using the Address Pool editor. By default, only a single address is in this pool. To support multiple simultaneous pages, several addresses should be added to the pool.

Select **Editors** → **Address Pool**, click **Add** to add more addresses. Following is the list of address used during compliance test.



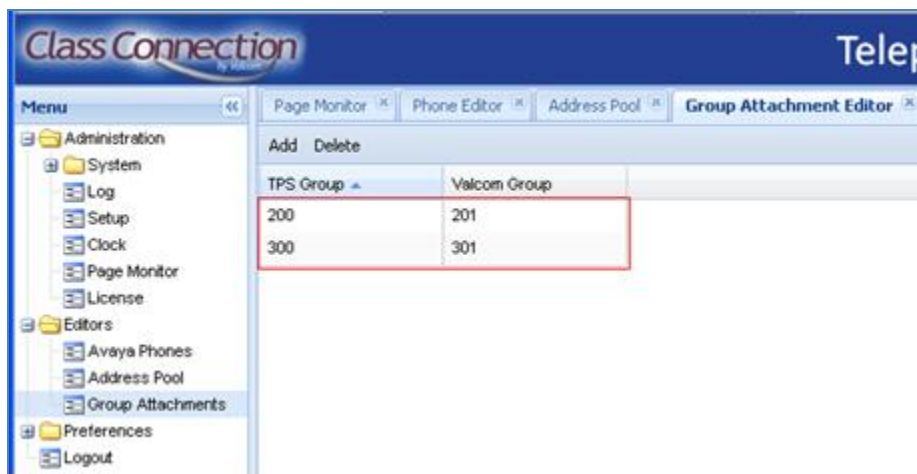
#### 6.5.4. Configure Group Attachment

The VE6023 detects a page has started and begins setting up the IP Phones. During this setup time, the page audio is buffered. As a result, if Valcom speakers and IP Phones are both playing the same page they may be out of sync. To solve this problem the VE6023 can source the audio to both IP Phones and Valcom Speakers and ensure they stay synchronized. This is done via the Group Attachment Editor.

Select **Editors** → **Group Attachment**, click **Add**.

- **TPS Group Code:** select a selected TPS group from the list.
- **Valcom group Code:** select a Valcom group.

Click Submit to save changes. Following is the list of Group Attachment used during compliance test.



## 7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and the Valcom devices. These steps verify the functionality in conjunction with the components used in the compliance test (VIP-201 and VIP-410).

### 7.1. Verify Extension Registration

In the **IP Office System Status** window, under **Extensions**, verify the extensions that are used for VIP-201 and VIP-410, are registered.

In the below figure, it show the following extensions 29235, 29236, 29237 are used for VIP-201 registered on IP Office. And extension 29238 is used for VIP-410.

**AVAYA** IP Office System Status

Help Snapshot LogOff Exit About

**System**

- Alarms (14)
- Extensions (34)**
- Trunks (8)
- Active Calls
- Resources
- VoiceMail
- IP Networking

**Extension Summary**

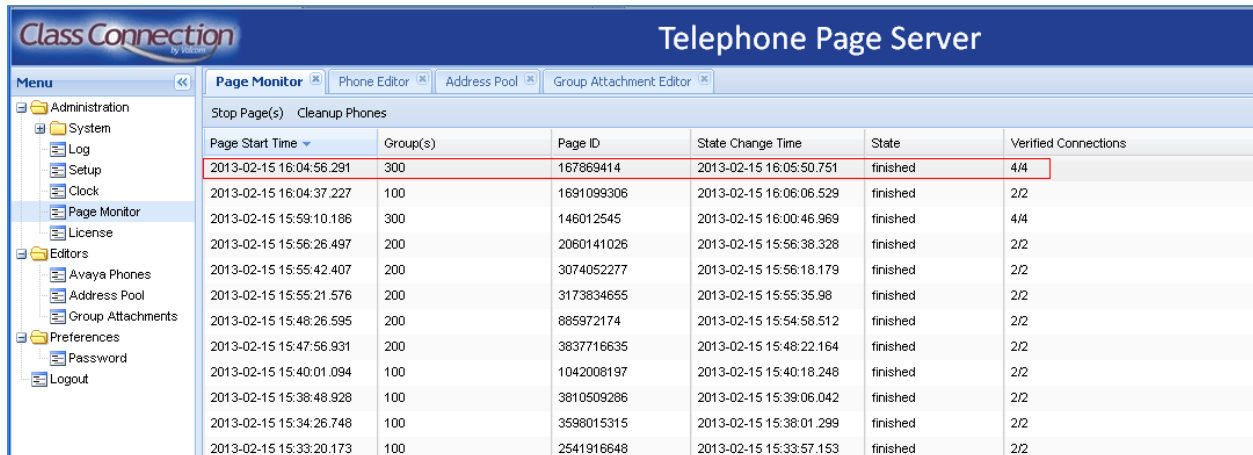
You can get more information about an extension by double-clicking the Extension Number.

Extension Number	Current User Extension	Current User Name	Module/ Slot/ IP Address	Port Number/ MAC Address	Telephone Type	Number of New Messages
29205	29205	Extn29205	Slot: 2	5	POT (CLI On)	
29206	29206	Extn29206	Slot: 2	6	POT (CLI On)	
29207	29207	Extn29207	Slot: 2	7	POT (CLI On)	
29208	29208	Extn29208	Slot: 2	8	POT (CLI On)	
29209	29209	Extn29209	Module: 1	1	9508	
29225	29225	Extn29225	10.33.5.51	2C-F4-C5-4E-79-89	9630	
29226	29226	Extn29226	10.33.5.204	2C-F4-C5-F5-B3-2D	1608L	
29234	29234	Extn29234	10.33.5.76		1140E SIP	
29235	29235	Extn29235	10.33.5.36		Unknown SIP Device	
29236	29236	Extn29236	10.33.5.36		Unknown SIP Device	
29237	29237	Extn29237	10.33.5.36		Unknown SIP Device	
29238	29238	Extn29238	10.33.5.24		Unknown SIP Device	
29239	29239	Extn29239	10.33.5.17	00-04-0D-ED-E7-37	9630	
29240	29240	Extn29240	10.33.5.59	00-1B-4F-74-CF-FB	9611	
29242	29242	Extn29242	10.33.5.26	B4-B0-17-7F-BD-76	9608	

Refresh Print...

## 7.2. Verify Telephone Page Server

Generate a page to one of the Valcom page groups assigned to one or more telephones. Verify that the page audio is connected to the correct phone group for the announcement. The **Page Monitor** screen of the VE6023 will display a list of pages and their status.



Stop Page(s)	Cleanup Phones	Page Start Time	Group(s)	Page ID	State Change Time	State	Verified Connections
		2013-02-15 16:04:56.291	300	167869414	2013-02-15 16:05:50.751	finished	4/4
		2013-02-15 16:04:37.227	100	1691099306	2013-02-15 16:06:06.529	finished	2/2
		2013-02-15 15:59:10.186	300	146012545	2013-02-15 16:00:46.969	finished	4/4
		2013-02-15 15:56:26.497	200	2060141026	2013-02-15 15:56:38.328	finished	2/2
		2013-02-15 15:55:42.407	200	3074052277	2013-02-15 15:56:18.179	finished	2/2
		2013-02-15 15:55:21.576	200	3173834655	2013-02-15 15:55:35.98	finished	2/2
		2013-02-15 15:48:26.595	200	665972174	2013-02-15 15:54:58.512	finished	2/2
		2013-02-15 15:47:56.931	200	3837716635	2013-02-15 15:48:22.164	finished	2/2
		2013-02-15 15:40:01.094	100	1042008197	2013-02-15 15:40:18.248	finished	2/2
		2013-02-15 15:38:48.928	100	3810509286	2013-02-15 15:39:06.042	finished	2/2
		2013-02-15 15:34:26.748	100	3598015315	2013-02-15 15:38:01.299	finished	2/2
		2013-02-15 15:33:20.173	100	2541916648	2013-02-15 15:33:57.153	finished	2/2

## 8. Conclusion

These Application Notes describe the configuration steps required for Valcom VE6023 Telephone Page Server to successfully interoperate with Avaya IP Office. All test cases were executed and passed.

## 9. Additional References

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

1. IP Office R8.1 Manager 10.1, August 03, 2012 available at <http://support.avaya.com>
2. Application Notes for Valcom PagePro IP with Avaya IP Office – Issue 1.0
3. PagePro IP SIP Based Paging Server documentation is available at <http://www.valcom.com>
4. Valcom Talkback IP Speaker documentation is available at <http://www.valcom.com>
5. Valcom VIP-102B IP Solutions Setup Tool Reference Manual is available at <http://www.valcom.com>
6. Valcom VE6023 User Manual is available at <http://www.valcom.com>

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