Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Hitachi Cable WirelessIP-5000-A SIP Telephone with Avaya Distributed Office using an Aruba Networks Wireless Network - Issue 1.0

Abstract

These Application Notes detail the steps for configuring interoperability between the Hitachi Cable WirelessIP-5000-A SIP Telephone and Avaya Distributed Office using an Aruba Networks wireless network.

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

As new products are delivered to the industry, proving interoperability between both existing and new platforms is important to customers who plan on deploying new platforms. Avaya Distributed Office extends telephony features to the Hitachi Cable WirelessIP-5000-A SIP Telephone.

These Application Notes demonstrate the configuration process that enables interoperability between Hitachi Cable WirelessIP-5000-A SIP Telephones and Avaya Distributed Office using an Aruba Networks wireless network. The Hitachi Cable WirelessIP-5000-A SIP Telephone is an 802.11b/g wireless SIP telephone capable of registering with Avaya Distributed Office.

1.1. Network Diagram

The network diagram shown in **Figure 1** illustrates the environment used for compliance testing. The network is comprised of Avaya Distributed Office, an Aruba MMC-6000 Multi-Service Controller an Aruba AP-65 wireless access point and two Hitachi Cable WirelessIP-5000-A SIP Telephones. One computer is present in the network providing DHCP service. The DHCP server was used to provide DHCP option 43 to the Aruba AP-65 Access Point. DHCP option 43 was configured to provide the IP address of the Aruba MMC-6000 Multi-Service Mobility Controller.

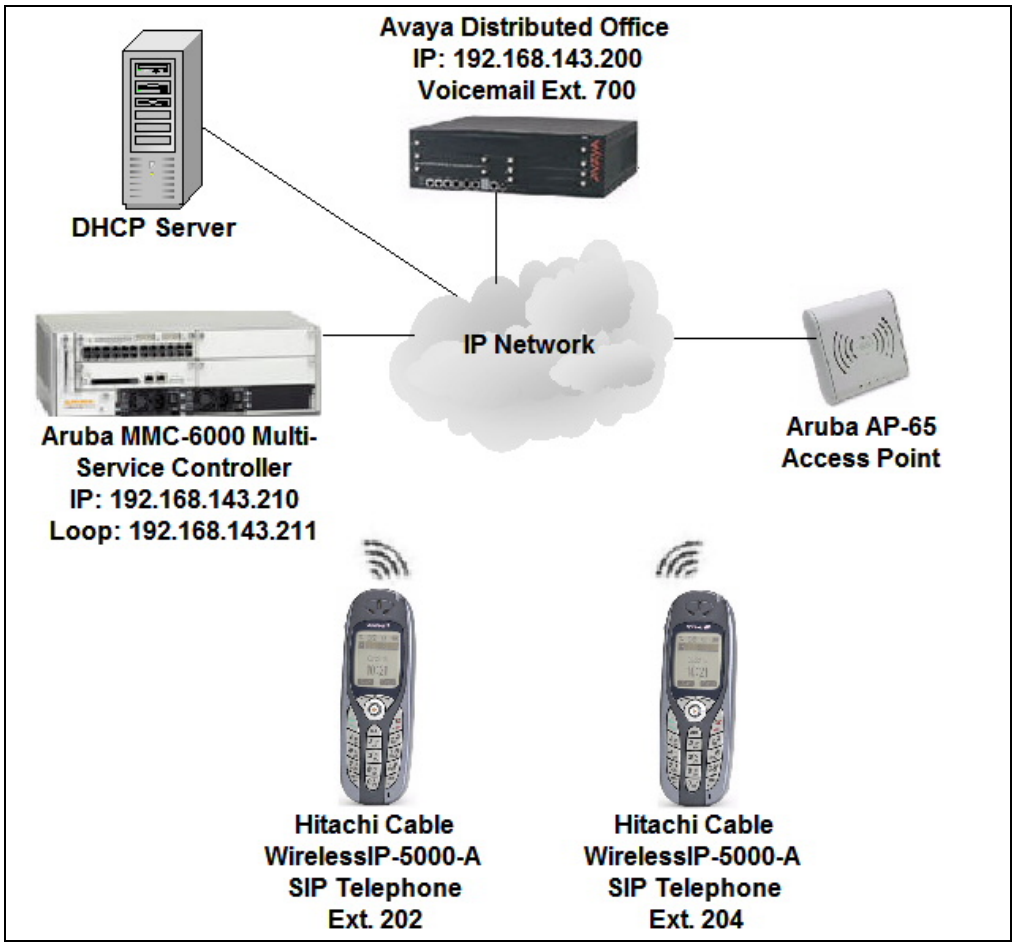


Figure 1: Sample Network Diagram

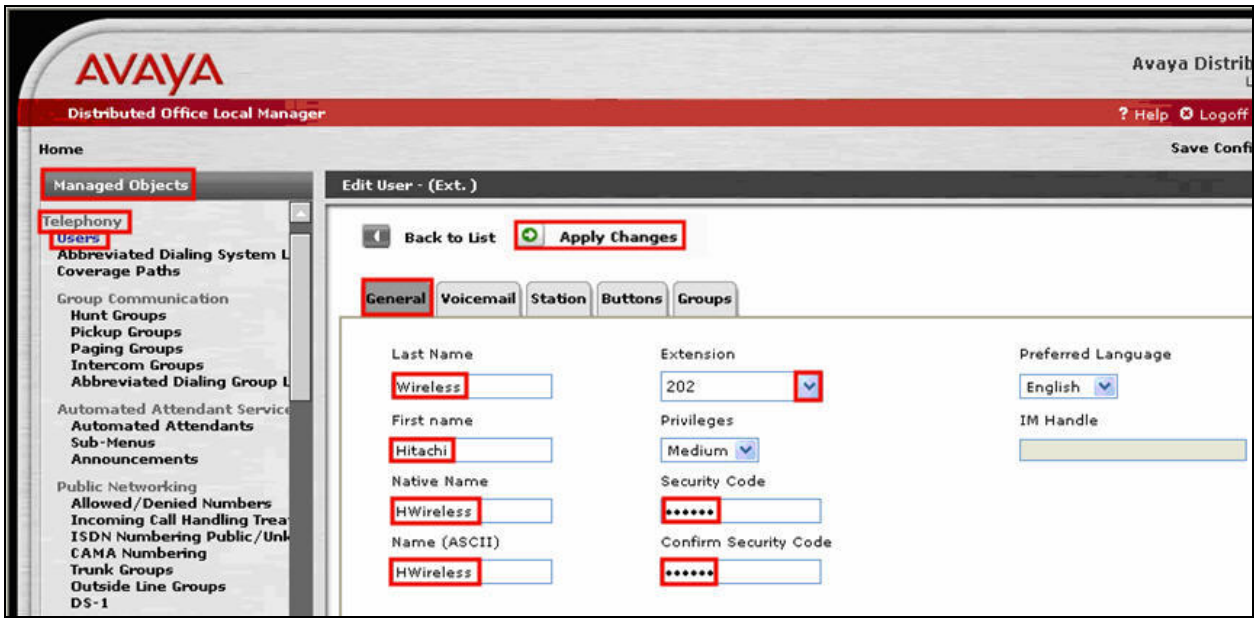
2. Equipment and Software Validated

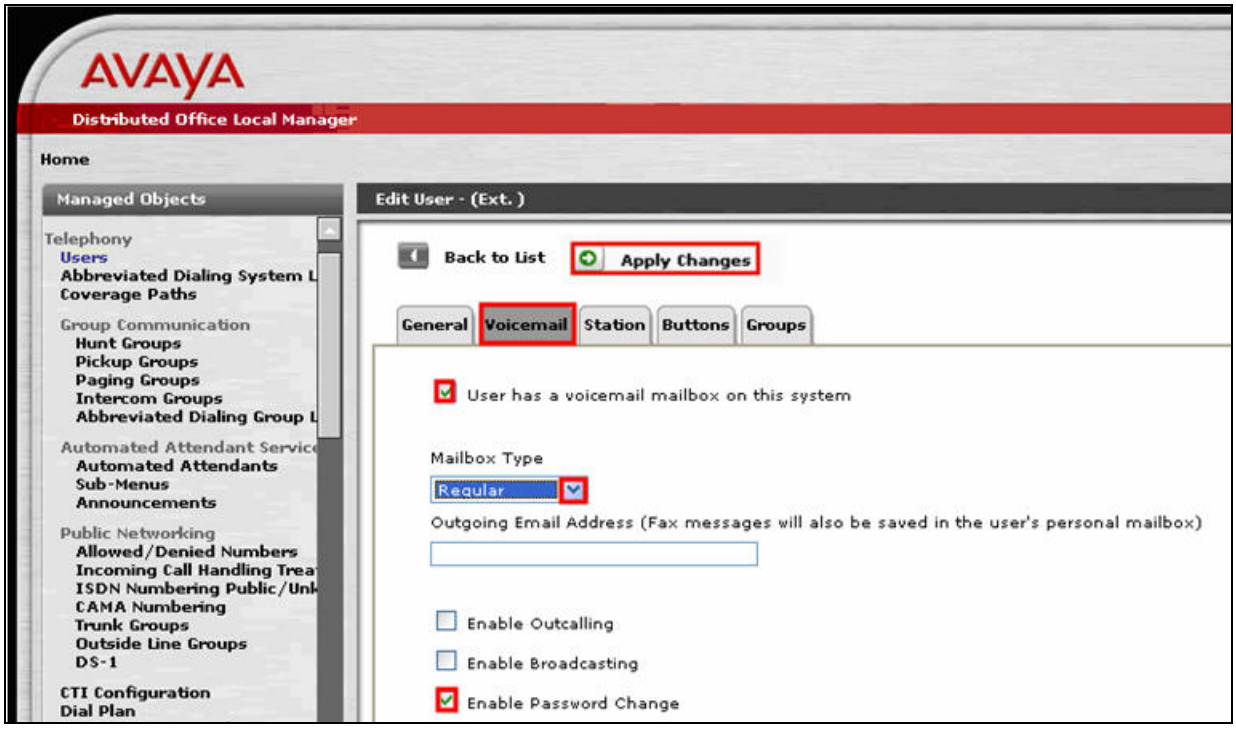
The following equipment and software were used for the sample configuration provided:

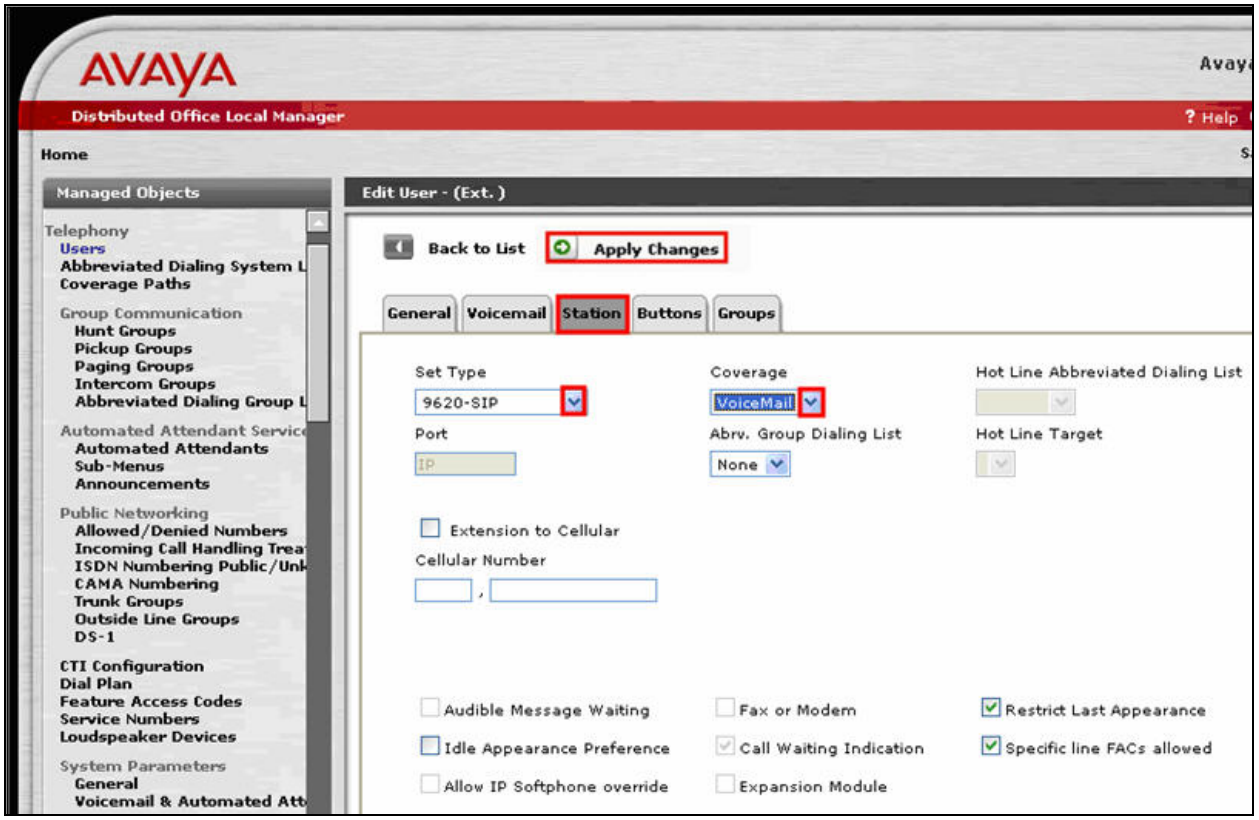
Equipment	Software
Avaya Distributed Office i120	1.1.0 (33.02) Service Pack 3.0.0
Hitachi Cable WirelessIP-5000-A SIP Telephone	Software : 2.5.1 Boot Rom : 1.1.4
Aruba MMC-6000 Multi-Service Controller	3.1.0.7
Aruba AP-65 Access Point	3.1.0.7

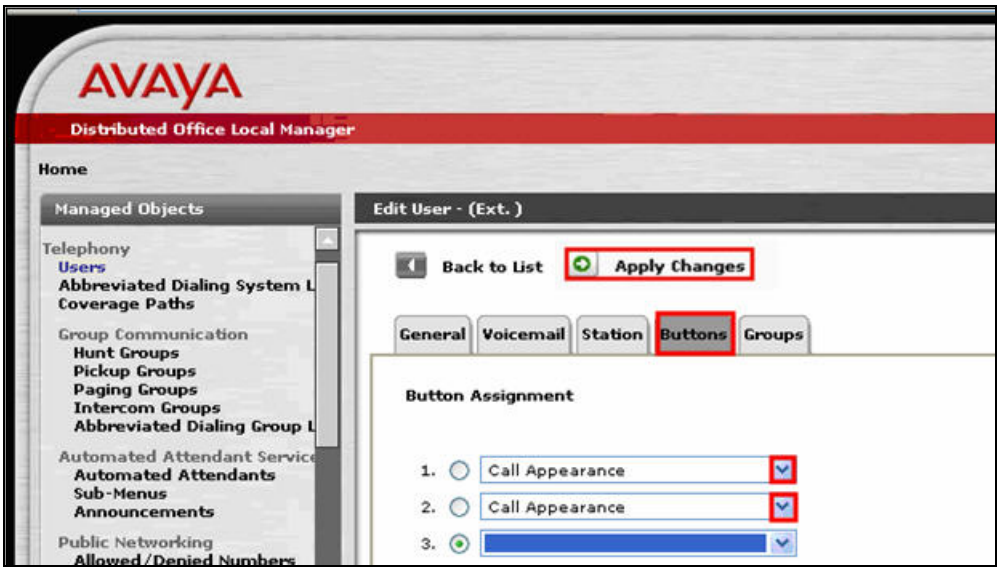
3. Avaya Distributed Office Configuration

Avaya Distributed Office is administered via a web interface. In the sample network Avaya Distributed Office was assigned the IP address 192.168.143.200 and the URL http://192.168.143.200 was used to access the administration interface. For information on how to access and setup a factory default system, refer to **Section 10** [**1**].

Step	Description
1.	Navigate to the **Edit User** window by clicking **Managed Object→Telephony→Users**. Click **Add New User** (not shown). The operator will be delivered to the **General** tab. Enter the values displayed below and then click **Apply Changes**. **Last Name**, **First name** and **Native Name** can be any descriptive text that identifies this user. **Name (ASCII)** may be populated with the same information that is entered in **Native Name**. **Security Code** and **Confirm Security Code** are numeric codes that must match. Use the drop-down list for **Extension** and select any available extension. The remaining parameters were left at the default values. 

Step	Description
2.	Navigate to the **Voicemail** tab by clicking **Voicemail**. Check the **User has a voice mailbox on this system** and **Enable Password Change** check boxes. Use the drop-down list for **Mailbox Type** to select "Regular". Click **Apply Changes**. 

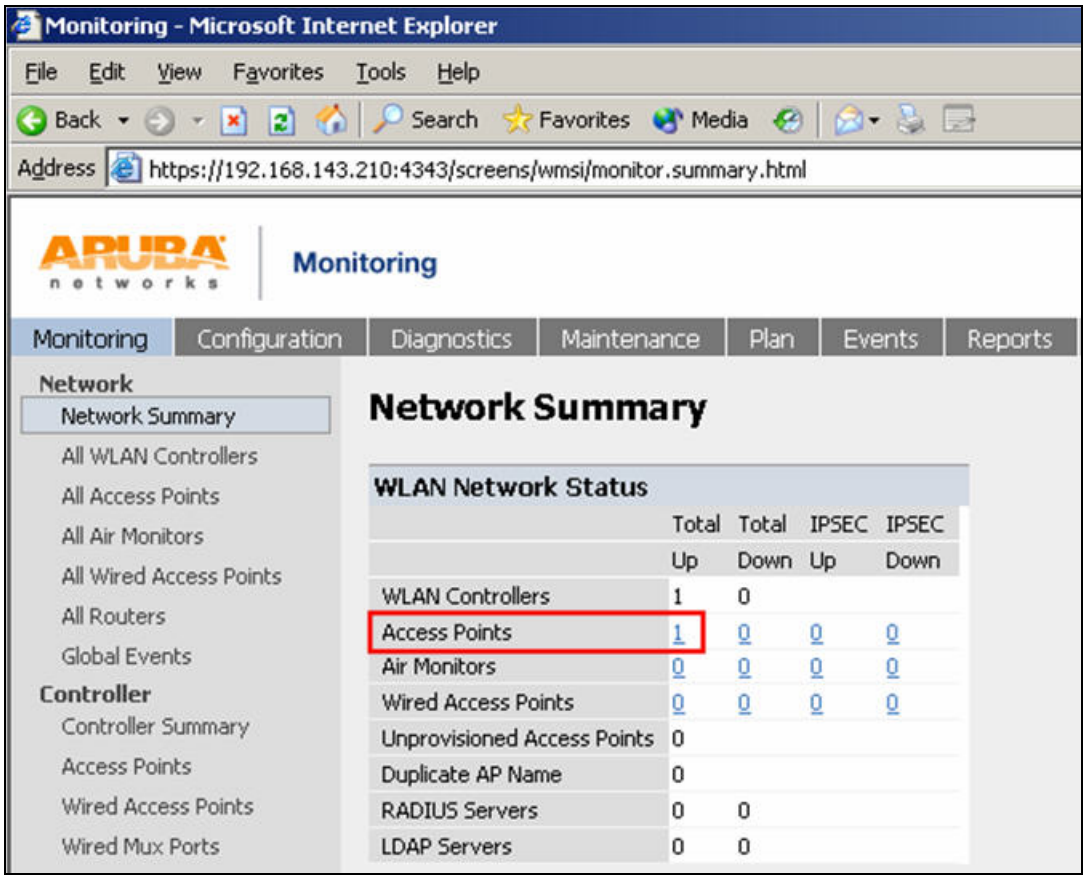
Step	Description
3.	Navigate to the **Station** tab by clicking **Station**. Use the drop-down list for **Set Type** to select "9620-SIP" and use the drop-down list for **Coverage** to select "VoiceMail". The remaining parameters were left at the default values. Click **Apply Changes**. 

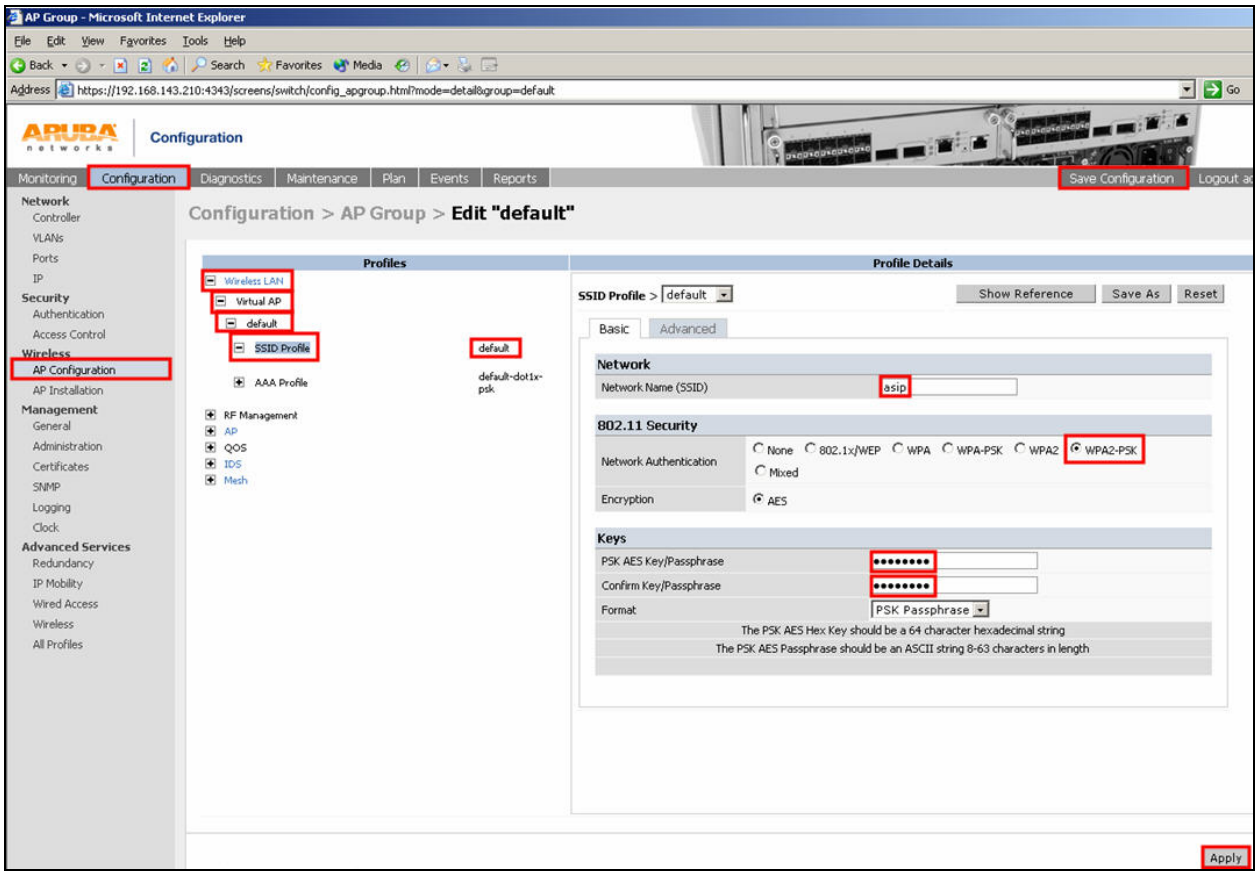
Step	Description
4.	Navigate to the **Buttons** tab by clicking **Buttons**. Use the drop-down list for **Button Assignment 1 – 2** and select "Call Appearance". Click **Apply Changes** and then click **Save Configuration**. Note the user may receive a message indicating the system is busy if **Save Configuration** is clicked immediately after **Apply Changes**. If that occurs, click **Save Configuration** after one or two minutes. 
5.	Repeat **Steps 1-4** for each Hitachi Cable WirelessIP-5000-A SIP Telephone modifying appropriate parameters such as name and extension.

4. Aruba MMC-6000 Multi-Service Controller Configuration

Step	Description
1.	To perform the initial configuration (factory default settings) on the Aruba MMC-6000 Multi-Service Controller setup a serial connection from a PC or laptop. Setup a terminal session with the following parameters: • 9600 baud • 8 bits • no parity • 1 stop bit • No flow control Log into the Aruba 6000 Mobility Controller using default credentials which can be obtained from the Aruba Networks documentation, see **Section 10** [**3**]. Provision **System name**, **VLAN 1 interface IP address**, **VLAN 1 interface subnet mask, IP Default gateway,** and **Switch Role**. Confirm that the Aruba 6000 Mobility Controller is restricted to the US country code. Once all the information has been configured, the system confirms the acceptance of these changes and requires a reboot. Enter **System name** [Aruba6000]:**Aruba6000** Enter **VLAN 1 interface IP address** [172.16.0.254]: **192.168.143.210** Enter **VLAN 1 interface subnet mask** [255.255.255.0]: **255.255.255.0** Enter **IP Default gateway** [none]: **192.168.143.254** Enter **Switch Role**, (master|local) [master]: **master** This controller is restricted to Country code US for United States, please confirm (yes|no)?: **yes** Do you wish to shutdown all the ports (yes|no)? [no]: **no** If you accept the changes the switch will restart! Type <ctrl-P> to go back and change answer for any question Do you wish to accept the changes (yes|no) **yes** System will now restart!

Step	Description
2.	After the Aruba 6000 Mobility Controller has rebooted, the switch port and loopback interface can be configured as shown below. (Aruba6000) #**configure t** Enter Configuration commands, one per line. End with CNTL/Z (Aruba6000) (config) #**interface loopback** (Aruba6000) (config-loop)#**ip address 192.168.143.211** Switch IP Address is Modified. Switch should be rebooted now (Aruba6000) (config) #**interface fastethernet 3/0** (Aruba6000) (config-if)#**switchport mode access** (Aruba6000) (config-if)#**switchport access vlan 1** (Aruba6000) (config-if)#**end** (Aruba6000) #**write mem** Saving Configuration... Configuration Saved. (Aruba6000) #**reload** Do you really want to reset the system(y/n): **y** System will now restart!

Step	Description
3.	Once the Aruba MMC-6000 Multi-Service Controller has rebooted, open a web browser connection to one of the IP addresses assigned to the Aruba MMC-6000 Multi-Service Controller. In the sample network, http://192.168.143.210 was used to access the Aruba MMC-6000 Multi-Service Controller web interface. Appropriate login credentials are required in order to access the web interface, refer to **Section 10** [**4**]. Once logged in, the user is presented with the **Monitoring** web page. This page can be used to ascertain the state of Aruba access points. Aruba access points use various methods for identifying the Aruba MMC-6000 Multi-Service Controller including DHCP, DNS, or static. Refer to **Section 10** [**4**] for compete information on how to administer Aruba access points. In the sample configuration, the DHCP server was configured to provide DHCP option 43, which provides the loopback IP address of the Aruba MMC-6000 Multi-Service Controller. 

Step	Description
4.	Navigate to the **AP Group** web page by clicking **Configuration→AP Configuration→Wireless LAN→Virtual AP→default→SSID Profile→default**. Enter the information displayed below, click **Apply,** and then click **Save Configuration**. **Network Name (SSID)** can be any alphanumeric string, in the sample network "asip" was used. Click the "WPA2-PSK" radio button, which automatically selects "AES" for **Encryption**. **PSK AES Key/Passphrase** and **Confirm Key/Passphrase** must match. For complete information on all of the encryption schemes supported by the Aruba MMC-6000 Multi-Service Controller refer to **Section 10** [**4**]. 

5. Hitachi Cable WirelessIP-5000-A SIP Telephone Configuration

The Hitachi Cable WirelessIP-5000-A SIP Telephone was configured using the keypad present on the telephone. For complete information on how to administer the Hitachi Cable WirelessIP-5000-A SIP Telephone, refer to **Section 10** [**2**]. Operators will need to configure certain settings such as extension and password found in **Section 3 Step 1**. Operators will also need to configure the wireless network configuration, such as, SSID and encryption/authentication found in **Section 4 Step 4**.

6. Interoperability Compliance Testing

The interoperability compliance testing focused on verifying the capability of the Hitachi Cable WirelessIP-5000-A SIP Telephone to interoperate with Avaya Distributed Office when configured as a "9620-SIP" set type.

Avaya's formal testing and Declaration of Conformity is provided only on the headsets/handsets that carry the Avaya brand or logo. Avaya may conduct testing of non-Avaya headset/handset to determine interoperability with Avaya phones. However, Avaya does not conduct the testing of non-Avaya headsets/handsets for: Acoustic Pressure, Safety, Hearing Aid Compliance, EMC regulations, or any other tests to ensure conformity with safety, audio quality, long-term reliability or any regulation requirements. As a result, Avaya makes no representations whether a particular non-Avaya headset will work with Avaya's telephones or with a different generation of the same Avaya telephone.

Since there is no industry standard for handset interfaces, different manufacturers utilize different handset/headset interfaces with their telephones. Therefore, any claim made by a headset vendor that its product is compatible with Avaya telephones does not equate to a guarantee that the headset will provide adequate safety protection or audio quality.

6.1. General Test Approach

The general test approach was to register the Hitachi Cable WirelessIP-5000-A SIP Telephone with Avaya Distributed Office. Calls were made between Hitachi Cable telephones and basic calling features were tested and verified to operate properly.

6.2. Test Results

The Hitachi Cable WirelessIP-5000-A SIP Telephone passed all test cases. The Hitachi Cable WirelessIP-5000-A SIP Telephone was verified to successfully register with Avaya Distributed Office as a "9620-SIP" set type. The Hitachi Cable WirelessIP-5000-A SIP Telephone was verified to be capable of placing/receiving calls with proper caller ID information. Basic calling features such as hold/return from hold, transfer (attended/unattended), multiple call appearances, voicemail and MWI were verified to operate correctly. Calls were maintained for durations lasting longer than one minute.

7. Verification Steps

The following steps can be used to ascertain the functional state of the Hitachi Cable WirelessIP-5000-A SIP Telephone.

- Place calls to other telephones within the network and verify two-way audio between endpoints.
- Dial into the Avaya Distributed Office Auto Attendant or voicemail and verify audio is heard, digits are properly interpreted and the Hitachi Cable WirelessIP-5000-A SIP Telephone can navigate the Auto Attendant or voicemail menus using the keypad present on the telephone.
- Exercise and verify proper operation of calling features such as hold/return from hold and transfer.

8. Support

Technical support for the Hitachi Cable WirelessIP-5000-A SIP Telephone can be obtained from the following:

- **Phone:** 1-914-993-0990
- **Email:** Hitachi Cable America, NY - info@hitachi-cable.com
- **Web :** http://www.wirelessip5000.com/eng/index.html

9. Conclusion

These Application Notes detail the configuration process that enables interoperability between the Hitachi Cable WirelessIP-5000-A SIP Telephone and Avaya Distributed Office using an Aruba Networks wireless network. These Application Notes also demonstrate the configuration that enables multiple call appearances and a voicemail box for the extension associated with the Hitachi Cable WirelessIP-5000-A SIP Telephone.

10. Additional References

The references listed below were used to assist in the configuration of the sample network environment. The Avaya documentation is available at http://support.avaya.com.

[1] *Avaya Distributed Office i20 Installation Quick Start*, May 2007 Issue 1, Document Number 03-602289

The Hitachi Cable documents are available on the product CDs.

[2] *WirelessIP5000E-A Administrator Manual*, Document Number TD61-2896E
[3] *WirelessIP5000E-A User's Manual*, Document Number TD61-2894E
[4] *ArubaOS 3.2 User Guide,* September 2007, Document Number 0510339

11. Change History

These Application Notes are being re-issued.

Issue	Date	Reason
1.1	1/31/2008	Updated to include the wireless network configuration.
1.0	9/18/2007	Initial issue

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.