



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Hitachi Cable WirelessIP-5000-A SIP Telephone with Avaya Distributed Office – Issue 1.0

Abstract

These Application Notes describe the configuration process for interoperability between the Hitachi Cable WirelessIP-5000-A SIP Telephone with Avaya Distributed Office. Information in these Application Notes has been obtained through *DeveloperConnection* compliance testing. Testing was conducted via the *DeveloperConnection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

Avaya Distributed Office has the capability to extend advanced telephony features to SIP stations through its integrated SIP platform. These features can be extended to non-Avaya SIP telephones such as the Hitachi Cable WirelessIP-5000-A SIP Telephone.

These Application Notes describe a sample solution for configuring the Hitachi Cable WirelessIP-5000-A SIP Telephone to interoperate with Avaya Distributed Office. The Hitachi Cable WirelessIP-5000-A SIP Telephone is an 802.11b/g wireless SIP telephone capable of registering with Avaya Distributed Office. The Hitachi Cable WirelessIP-5000-A SIP Telephone can be identified from other Hitachi Cable model telephones by the asterisk shaped speaker found on the back of the phone, see **Section 4**. The Hitachi Cable WirelessIP-5000-A SIP Telephone has many additional features and supports a wide array of industry standards. See **Reference [3]** in **Section 9** for the complete list of features and standards supported.

The network diagram shown in **Figure 1** illustrates the testing environment used for compliance testing. The network consists of an Avaya Distributed Office i40 platform, wired and wireless IP telephones and a wireless network infrastructure. The integrated voicemail available on Avaya Distributed Office was used in testing.

The wired IP telephones include the Avaya 9630 and the Avaya 4621SW IP Telephones. The wireless IP telephones are the Hitachi Cable WirelessIP-5000-A SIP Telephones. The configuration of the wireless network is assumed to be in place.

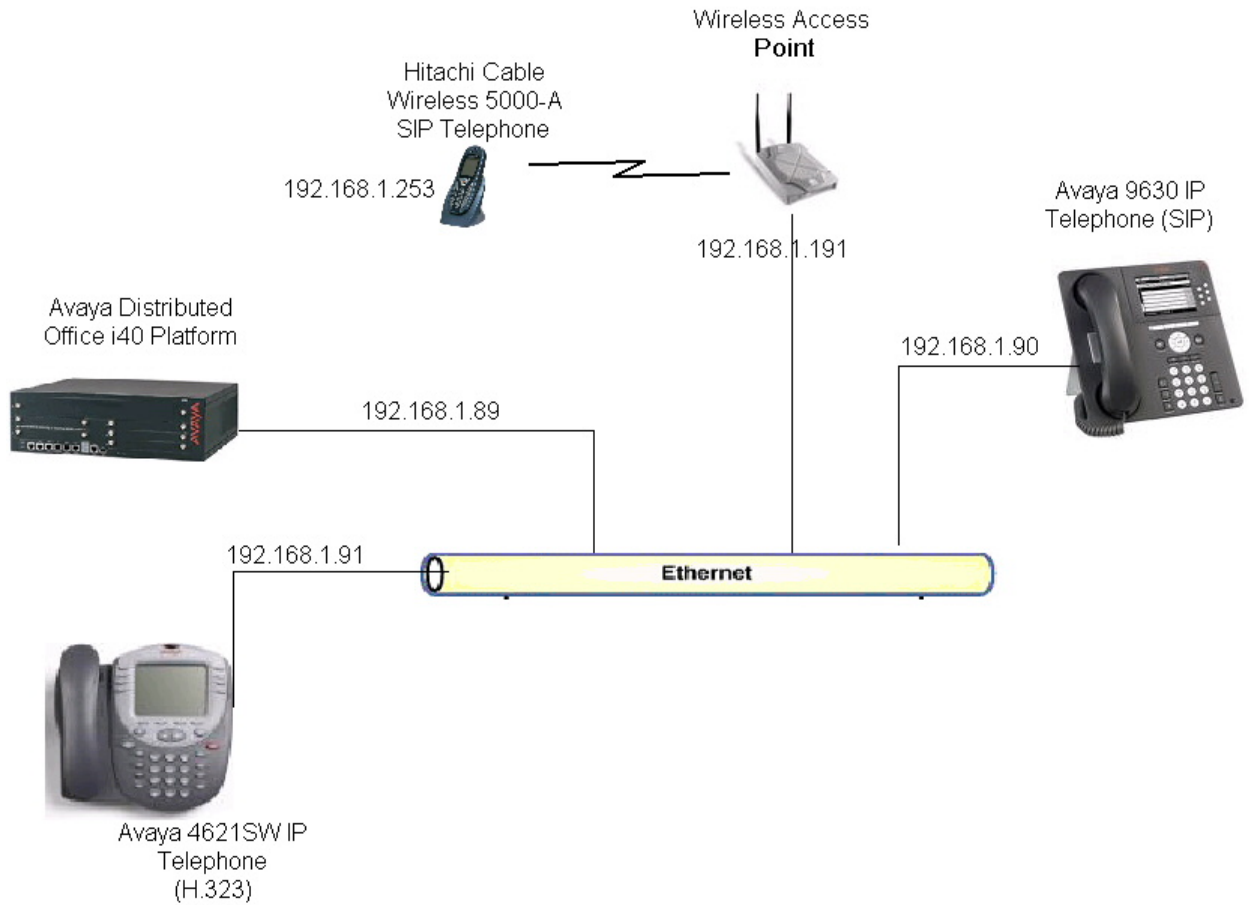


Figure 1: Sample Network Diagram for Hitachi Cable WirelessIP-5000-A SIP Telephone with Avaya Distributed Office

2. Equipment and Software Validated

The following equipment and software were used for the test environment:

Equipment	Software
Avaya Distributed Office i40	1.1.0 (33.02) Service Pack 3.0.0
Avaya 4621 IP Telephone (H.323)	2.8
Avaya 9630 IP Telephone (SIP)	1.0.12.13(24)
Hitachi Cable WirelessIP-5000-A SIP Telephone	Software : 2.5.1 Boot Rom : 1.1.4

3. Avaya Distributed Office

This section covers the administration of Avaya Distributed Office, which is administered via an Internet Browser using the Avaya Distributed Office Local Manager or Avaya Distributed Office Central Manager. These Application Notes describe the administration using Avaya Distributed Office Local Manager.

It is assumed that Avaya Distributed Office software has already been installed. See **Reference [1]** in **Section 9** for details. The IP Address and SIP Domain Name for the Avaya Distributed Office i40 platform are defined during installation. This section does not cover the configuration of these parameters. **Appendix A** provides the information used for this test.

Access the Avaya Distributed Office Local Manager by entering <http://<ip-addr>> as the URL in an Internet Browser where <ip-addr> is the IP Address of Avaya Distributed Office. Log in with the appropriate credentials.

1. Create a User for the Hitachi Cable WirelessIP-5000-A SIP Telephone. In the **Managed Objects** pane, double-click on the **Users** option under **Telephony** (Not Shown).

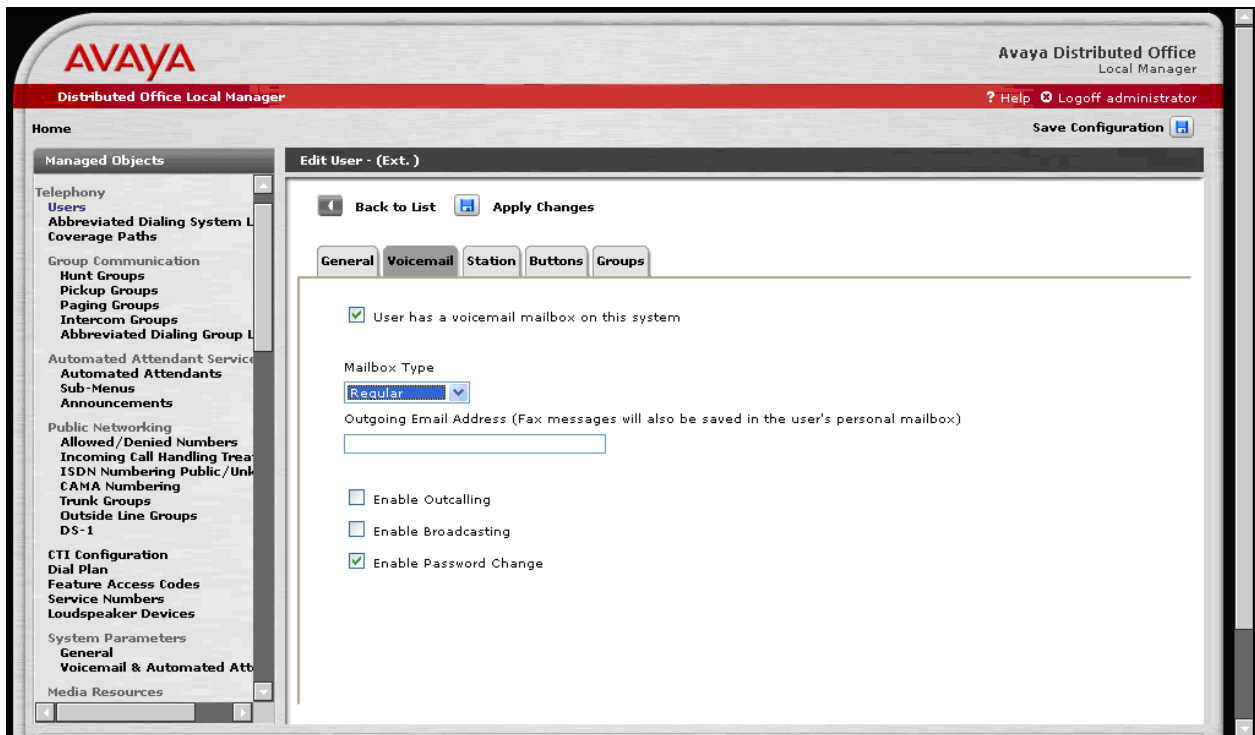
Click on the **Add New User** option.

Select the **General** tab. Fill in **Last Name**, **First Name** and **Native Name** as needed. The **Name (ASCII)** field is automatically populated with the **Native Name**. Select an **Extension** number (this field is automatically populated based on the dial plan). Enter a **Security Code** and **Confirm Security Code**. All other fields can be left as default.

The screenshot displays the Avaya Distributed Office Local Manager interface. The top navigation bar includes the Avaya logo, the title 'Avaya Distributed Office Local Manager', and user information: '? Help', 'Logoff administrator', and 'Save Configuration'. The left sidebar shows a tree view of 'Managed Objects' under 'Telephony', with 'Users' selected. The main content area is titled 'Edit User - (Ext.)' and features a 'Back to List' button and an 'Apply Changes' button. Below these are tabs for 'General', 'Voicemail', 'Station', 'Buttons', and 'Groups', with 'General' currently active. The form contains the following fields:

Last Name	Extension	Preferred Language
<input type="text" value="Wireless"/>	<input type="text" value="202"/>	<input type="text" value="English"/>
First name	Privileges	IM Handle
<input type="text" value="Hitachi"/>	<input type="text" value="Medium"/>	<input type="text"/>
Native Name	Security Code	
<input type="text" value="HWireless"/>	<input type="text" value="*****"/>	
Name (ASCII)	Confirm Security Code	
<input type="text" value="HWireless"/>	<input type="text" value="*****"/>	

2. Configure the Voicemail parameters. Select the **Voicemail** tab. Check the **User has a voicemail mailbox on this system** box. All other fields can be left as default.



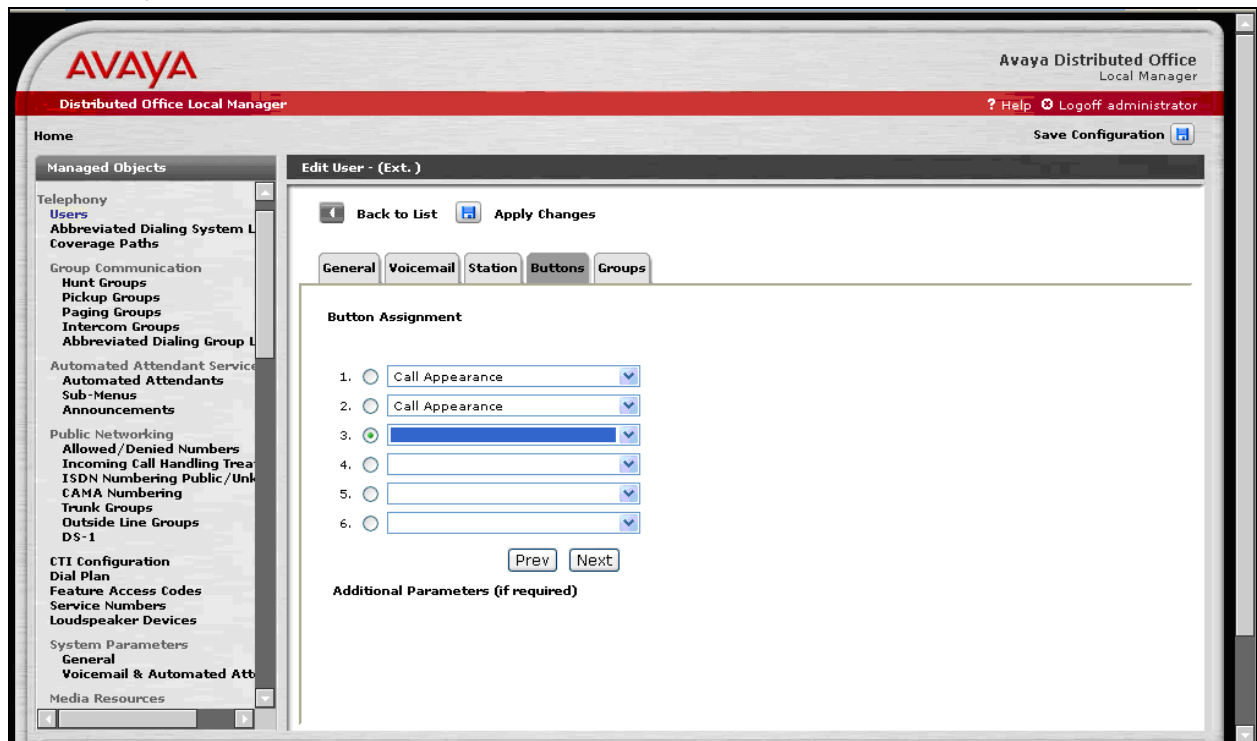
3. *Configure the Station parameters.* Select the **Station** tab. Select **9620-SIP** for **Set Type** and **Voicemail** for the **Coverage** option. All other fields can be left as defaults.

The screenshot displays the Avaya Distributed Office Local Manager interface. The top navigation bar includes the Avaya logo, the title 'Distributed Office Local Manager', and user information 'Avaya Distributed Office Local Manager' with a 'Logoff administrator' link. A 'Home' button and a 'Save Configuration' button are also present. A left-hand sidebar lists various 'Managed Objects' such as 'Telephony', 'Users', 'Abbreviated Dialing System L', 'Coverage Paths', 'Group Communication', 'Automated Attendant Services', 'Public Networking', 'CTI Configuration', 'Dial Plan', 'Feature Access Codes', 'Service Numbers', 'Loudspeaker Devices', 'System Parameters', and 'Media Resources'. The main content area is titled 'Edit User - (Ext.)' and features a 'Back to List' button and an 'Apply Changes' button. Below these are five tabs: 'General', 'Voicemail', 'Station', 'Buttons', and 'Groups'. The 'Station' tab is currently selected. The configuration fields under the 'Station' tab include: 'Set Type' (dropdown menu set to '9620-SIP'), 'Coverage' (dropdown menu set to 'Voicemail'), 'Hot Line Abbreviated Dialing List' (dropdown menu), 'Port' (text input field containing 'IP'), 'Abrv. Group Dialing List' (dropdown menu set to 'None'), 'Hot Line Target' (dropdown menu), 'Extension to Cellular' (checkbox, unchecked), 'Cellular Number' (text input field), 'Audible Message Waiting' (checkbox, unchecked), 'Fax or Modem' (checkbox, unchecked), 'Restrict Last Appearance' (checkbox, checked), 'Idle Appearance Preference' (checkbox, checked), 'Call Waiting Indication' (checkbox, checked), 'Specific line FACs allowed' (checkbox, checked), 'Allow IP Softphone override' (checkbox, unchecked), and 'Expansion Module' (checkbox, unchecked).

4. *Configure the buttons.* By default, the **Set Type** of **9620-SIP** has three Call Appearance buttons. For the Hitachi Cable WirelessIP-5000-A SIP Telephone, this needs to reduce to two Call Appearances.

Select the **Buttons** tab. Select the **Button 3** radio button. Change the selection from **Call Appearance** to blank.

Click on the **Apply Changes** option.

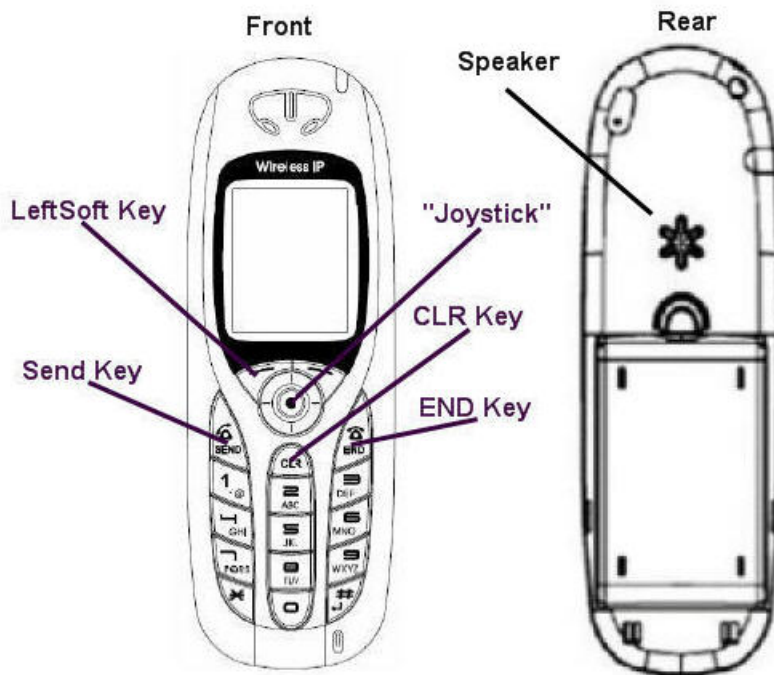


5. *Save the changes.* In the **Home** pane, select the **Save Configuration** option.

4. Administering the Initial Configuration of the Hitachi Cable WirelessIP-5000-A SIP Telephone

The following steps describe the configuration process for the Hitachi Cable WirelessIP-5000-A SIP Telephone to connect to a wireless network and register with Avaya Distributed Office. In order to connect the Hitachi Cable WirelessIP-5000-A SIP Telephone to a wireless network the user must first configure the telephone to create the initial WiFi binding. Use the buttons on the face of the telephone for this operation. Once the Hitachi Cable WirelessIP-5000-A Telephone has a WiFi binding with an IP address, the user can complete the configuration process using the web server built into the telephone. There are some vendor specific configuration dependencies in the configuration file, consult with Hitachi support for specific inquiries.

A picture of the Hitachi Cable WirelessIP-5000-A SIP Telephone is shown below. The buttons used for configuring the telephone are referenced.

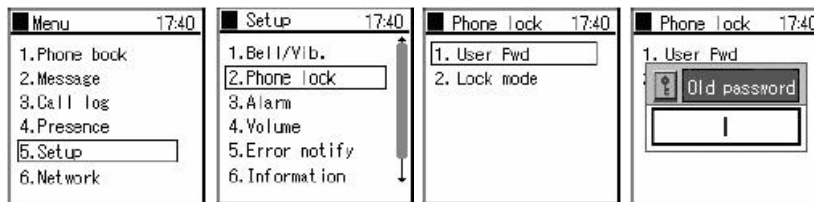


Note: For the complete description of each button and each button's functionality refer to the Hitachi Cable documentation found in **References [2] and [3] in Section 9**. To power on the Hitachi Cable WirelessIP-5000-A SIP Telephone press and hold the **END Key** until the phone powers up.

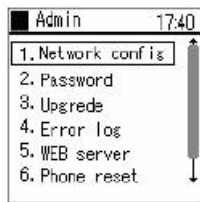
1. *Enter Network Administration.* Once the phone has powered up, press the **LeftSoft Key** to enter the menu.



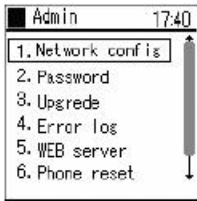
From the **Menu** screen, use the key sequence **5, 2, 1 (Setup→Phone lock→User Pwd)** in order to obtain access to the **Admin** menu. Enter the correct password for accessing the **Admin** menu and press the **Joystick** in. A password is required to access this menu, for additional information See **Reference [3]** in **Section 9**.



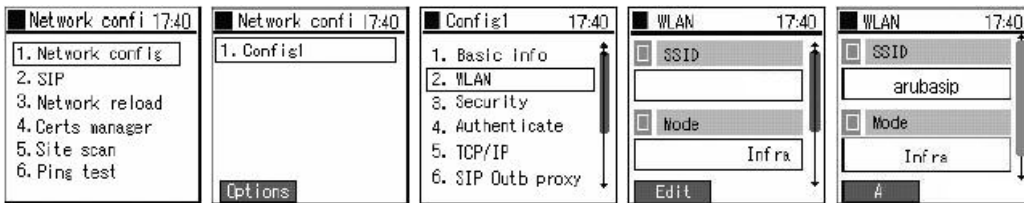
The user is now presented with the **Admin** menu.



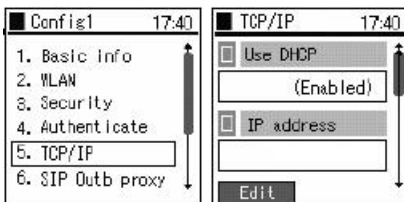
2. *Configure the Wireless LAN information.* From the **Admin** menu, press **1** to select **Network config**.



From the **Network config** menu use the key sequence **1, 1, 2** (**Network config**→**Config1**→**WLAN**) to access the **WLAN** menu. Press the **LeftSoft Key** to select **Edit**. Use the keypad to enter the **SSID**, which must match the SSID configured on the wireless network.



3. *Configure the TCP/IP information.* From the **Config1** menu press **5** to configure the TCP/IP parameters for the Hitachi Cable WirelessIP-5000-A SIP Telephone. If DHCP is not enabled press the **LeftSoft Key** and select **Edit** then using the **JoyStick** toggle left/right to enable DHCP.



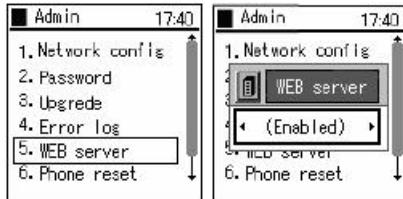
4. *Configure the Security settings.* From the **Config1** menu, press **3** to administer the **Security** configuration. Press the **LeftSoft Key** and select **Edit** to modify the security mode. Using the **Joystick** press left/right until the **WPA2-PSK** option is selected. Using the keypad specify the pass phrase assigned to the SSID. Press the **Joystick** in to complete the Security configuration.



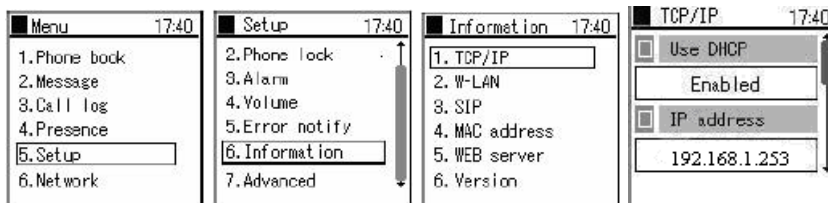
For the procedures to enable the Hitachi Cable WirelessIP-5000-A SIP Telephone to support

the additional security schemas tested refer to **References [2] and [3] in Section 9.**

5. *Verify web server.* In order to verify the web server is running on the Hitachi Cable WirelessIP-5000-A SIP Telephone, use the **Admin** menu. From the **Admin** menu, press **5** to check the status of the web server. Should the web server be “disabled”, use the **JoyStick** and toggle left/right and select **Enabled**. Press the **JoyStick** inward.



To obtain the IP address assigned via DHCP to the Hitachi Cable WirelessIP-5000-A SIP Telephone use the key sequence **5, 6, 1 (Setup→Information→TCP/IP)** from the **Menu** menu.



The Web interface can be used for the rest of the Hitachi Cable WirelessIP-5000-A SIP Telephone administration.

6. *Enter Web Administration.* From a web browser running on a PC with IP connectivity to the Hitachi Cable WirelessIP-5000-A SIP Telephone, administer the telephone as follows. Place the IP address of the telephone into the URL address field specifying the port 8080. The web server inside the Hitachi Cable WirelessIP-5000-A SIP Telephone operates at port 8080. The URL string to access the web server of a telephone (which has an IP address of 192.168.1.253) is <http://192.168.1.253:8080>. The user will be required to supply a username and password to access the web interface, consult the Hitachi Cable documentation for the appropriate credentials, see **Reference [3]** in **Section 9**. Click **Configuration**.

[Main Page](#) [Configuration](#) [System Setup](#) [Network Setup](#)

WirelessIP5000A Web Configuration Tool

- [Configuration](#)
- [System Setup](#)
- [Network Setup](#)
- [Download Configuration File](#)

Software Specification	
MODEL	WirelessIP5000A
SOFTWARE VERSION	v2.5.1
IP ADDRESS	192.168.1.253
NETMASK	255.255.255.0
GATEWAY	192.168.1.1
MAC ADDRESS	00:03:2A:02:04:F3

7. *Configure the SIP Proxy information.* From the screen in **Step 6**, select **Network Setup** then **SERVER SETTINGS** (Not Shown). Enter the **IP Address** of Avaya Distributed Office (see **Appendix A**) in the **1st Proxy** and **1st Registrar** fields. Enter the Avaya Distributed Office **SIP Domain Name** (see **Appendix A**) in the **Domain Realm** field. All other fields can be left as defaults. Press the **CHANGE VALUE** button.

[Main Page](#) [Configuration](#) [System Setup](#) [Network Setup](#)

SERVER SETTINGS

- 1st Proxy
- 1st Registrar
- 2nd Proxy
- 2nd Registrar
- Domain Realm
- Register Expire (60~36400) s
- Register Retry Backoff Interval s (CSV Format)

8. *Configure the SIP Outbound Proxy.* On the **Network Setup** screen, select **Config 3** (Not Shown). Set the **SIP Outbound Proxy** to the Avaya Distributed Office **IP Address** (see **Appendix A**). All other fields can be left as defaults. Scroll down and press the **CHANGE VALUE** button (Not Shown).

[Main Page](#) [Configuration](#) [System Setup](#) [Network Setup](#)

Network Profile [Config3]

- Name
- Join Method
- SIP Outbound Proxy
- SSID
- Enable DHCP On Off
- Address

192	168	1	253
-----	-----	---	-----
- Netmask

255	255	255	0
-----	-----	-----	---
- Gateway

192	168	1	1
-----	-----	---	---
- DNS1

0	0	0	0
---	---	---	---
- DNS2

0	0	0	0
---	---	---	---
- Security
- WEP Bits
- Default WEP Key
- WEP Key1
- WEP Key2
- WEP Key3
- WEP Key4
- Authentication Algorithm

9. *Configure the User information.* This step uses the information from **Step 1** in **Section 3**. On the **Network Setup** screen, select **USER ACCOUNT** (Not Shown). Set the **Display Name** to be the same as the Avaya Distributed Office **Native Name**. Set the **Phone Number** and **User ID** to be the same as the Avaya Distributed Office **Extension**. Set the **User Password** to the Avaya Distributed Office **Security Code**. All other fields can be left as defaults. Press the **CHANGE VALUE** button.

Main Page Configuration System Setup Network Setup

USER ACCOUNT

- Displayname
- Phone Number
- User ID
- User Password
- URL Scheme

10. *Configure the DTMF settings.* Select the **Configuration Option** on the top of the screen and then select **DTMF** (Not Shown). Set the **Mode** to be **RFC2833**. Set the **Enable Auto DTMF Mode** option to **On**. All other fields can be left as defaults. Press the **CHANGE VALUE** button.

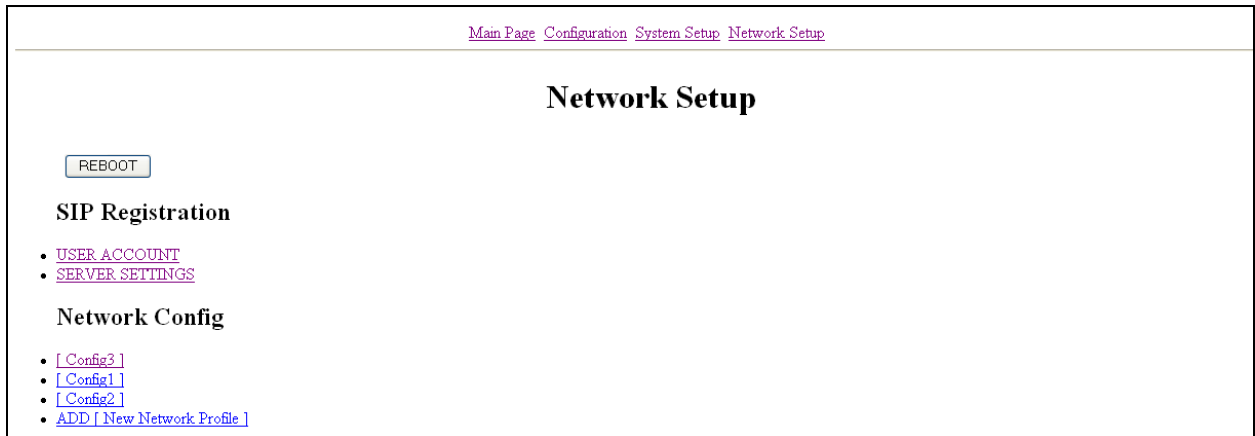
Note: If this value is not changed, the user will not be able to call into voicemail and retrieve messages.

Main Page Configuration System Setup Network Setup

DTMF

- Mode
- Duration (0~1000) ms
- RFC2833 Volume
- RFC2833 Payload Type (96~127)
- Enable Auto DTMF Mode On Off

11. *Reboot the telephone.* Select the **Network Setup** option on the top part of the screen (Not Shown). Press the **REBOOT** button. Press the **Reboot Now?** button when prompted.



5. Interoperability Compliance Testing

The interoperability compliance testing focused on verifying the capability of the Hitachi Cable WirelessIP-5000-A SIP Telephone to function as a registered endpoint on Avaya Distributed Office. Testing verified the interoperability between Hitachi Cable WirelessIP-5000-A SIP Telephone, Avaya SIP phones and Avaya H.323 phones.

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.

1.1. 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 both wired and wireless telephones and specific calling features were exercised.

1.2. Test Results

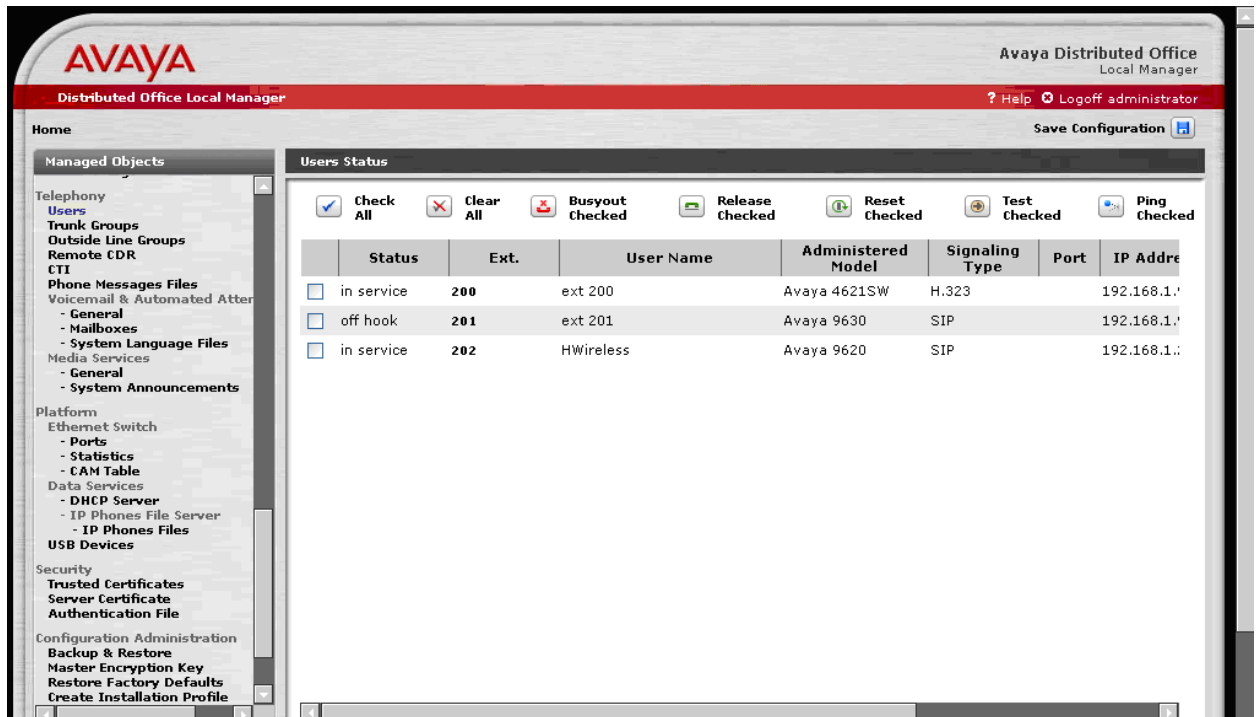
The Hitachi Cable WirelessIP-5000-A SIP Telephone passed all test cases. The Hitachi Cable WirelessIP-5000-A SIP Telephone was verified to successfully register with Avaya Distributed Office. The telephony features verified to operate correctly included attended/unattended transfer, conference call participation, conference call add/drop, multiple call appearances, caller ID operation, call forwarding unconditional, call forwarding on busy, call forwarding clear, voicemail, hold, return from hold, send all calls, call pickup and hunt groups.

6. Verification Steps

The following steps may be used to verify that the configuration is working properly.

Avaya Distributed Office Verification Steps

- Place calls with the Hitachi Cable WirelessIP-5000-A SIP Telephone. Exercise calling features such as conference, transfer and hold and verify proper operation of those features.
- Using Avaya Distributed Office Local Manager, in the **Managed Objects** pane, double-click on the **Users** option under **Maintenance and Monitoring->Telephony**. Verify the Hitachi Cable WirelessIP-5000-A SIP Telephone entry shows **in service**.



Hitachi Cable WirelessIP-5000-A SIP Telephone Verification Steps

- Verify that the Hitachi Cable WirelessIP-5000-A SIP Telephone has the correct SSID configured. Use the steps outlined in **Section 4 Step 2** to confirm all of the settings are correct.
- Verify that the Hitachi Cable WirelessIP-5000-A SIP Telephone has an IP address assigned and is configured for DHCP, see **Section 4 Step 3**.
- Verify that the Hitachi Cable WirelessIP-5000-A SIP Telephone has the correct SIP server configuration. Use the steps outlined in **Section 4 Steps 7 and 8** to confirm all the settings and IP address information are correct.
- Verify the Hitachi Cable WirelessIP-5000-A SIP Telephone can place and receive calls both to and from stations within the network and that two-way audio is heard.

7. Support

For technical support on the Hitachi Cable WirelessIP-5000-A SIP Telephone use the information below.

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

8. Conclusion

These Applications Notes described the configuration steps to enable the Hitachi Cable WirelessIP-5000-A SIP Telephone to interoperate with Avaya Distributed Office.

9. Additional References

1. *Avaya Distributed Office i40 Installation Quick Start*, May 2007, Issue 1 Document Number 03-602289
2. *WirelessIP5000E-A Administrator Manual*, Document Number TD61-2896E
3. *WirelessIP5000E-A User's Manual*, Document Number TD61-2894E

APPENDIX A: Avaya Distributed Office Network Setup

The following screen shows the network settings used for the test. In the **Managed Objects** pane, double-click on the **System Summary** option under **Maintenance and Monitoring**. The **IP Address** and the **SIP Domain** are the parameters that are needed for configuring the Hitachi Cable WirelessIP-5000-A SIP Telephone.

The screenshot shows the Avaya Distributed Office Local Manager interface. The top navigation bar includes the Avaya logo, the title 'Avaya Distributed Office Local Manager', and a 'Save Configuration' button. The left-hand 'Managed Objects' pane is expanded to 'System Summary'. The main content area is divided into two sections: a top section for system parameters and a bottom table for hardware components.

System Summary Parameters:

- Device: i40-ds1
- Name: i40
- Location:
- Contact:
- IP Address: 192.168.1.89
- Platform IP Address: 192.168.1.90
- Subnet: 255.255.255.0
- VLAN: V1(1)
- MAC Address: 00:04:0D:F5:59:BC
- Platform MAC Address: 00:04:0D:6D:85:01
- Status: Active Alarms
- Date & Time: 11:12:43 EDT 07 Sep 2007
- Uptime: 6 min
- RAM: 226MB/512MB
- Flash: 448MB/1024MB
- Load average: 6.47 4.44 2.00
- Firmware: 1.1.0_33.02-SP-3.0.0
- Emergency Transfer Relay: inactive
- Current TDM clock source: Local
- SIP Domain: example.com
- Branch Prefix: 50
- SES IP Address: 198.152.254.3

Hardware Components Table:

Slot	Module	Type	HW Vintage	HW Suffix	Serial #	FW Version	Notes
1	AM110	Server Blade	0	B	07IS30128718	1.1.0_33.02-SP-3.0.0	
3	Integrated analog	Analog	5	A	N/A	N/A	
4	Integrated DS1	ISDN PRI	5	A	N/A	N/A	
Chassis	i40-DS1	Platform	4	C	07IS30105954	27.12.0	

©2007 Avaya Inc. All Rights Reserved.

Avaya and the Avaya Logo are trademarks of Avaya Inc. All trademarks identified by ® and ™ are registered trademarks or trademarks, respectively, of Avaya Inc. All other trademarks are the property of their respective owners. The information provided in these Application Notes is subject to change without notice. The configurations, technical data, and recommendations provided in these Application Notes are believed to be accurate and dependable, but are presented without express or implied warranty. Users are responsible for their application of any products specified in these Application Notes.

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 Developer*Connection* Program at devconnect@avaya.com.