Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Hitachi Cable WIP 5000E-A SIP Telephone with Avaya Communication Manager and Avaya SIP Enablement Services Server – Issue 1.0

Abstract

These Application Notes describe the configuration process for interoperability between the Hitachi Cable WIP 5000E-A SIP Telephone with Avaya Communication Manager and Avaya SIP Enablement Services (SES) Server. Information in these Application Notes has been obtained through Developer*Connection* compliance testing. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

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1. Introduction

Avaya Communication Manager and Avaya SIP Enablement Services Server has the capability to extend advanced telephony features to SIP stations. These features can be extended to non-Avaya SIP telephones such as the Hitachi Cable WIP 5000E-A SIP Telephone.

These Application Notes describe a sample solution for configuring the Hitachi Cable WIP 5000E-A SIP Telephone to interoperate with Avaya Communication Manager and Avaya SIP Enablement Services Server. The Hitachi Cable WIP 5000E-A SIP Telephone is a wireless SIP telephone capable of registering with the Avaya SIP Enablement Services Server. The Hitachi Cable WIP 5000E-A SIP Telephone is the latest iteration of the WIP 5000E family. The previous model WIP 5000E will be discontinued. The Hitachi Cable WIP 5000E-A SIP Telephone can be easily identified by the asterisk shaped speaker found on the back of the phone. The Hitachi Cable WIP 5000E-A SIP Telephone has many additional features and supports a wide array of industry standards, please refer to **Section 10** [**1**] for the complete list of new features and standards support.

1.1. Network Diagram

Figure 1 illustrates the sample environment used for compliance testing. The extension numbers used by the Hitachi Cable WIP 5000E-A SIP Telephones, are registered via Avaya SIP Enablement Services Server and are administered as Off-PBX-Telephone stations in Avaya Communication Manager. All SIP phones used in the environment were configured in a similar fashion. The H.323 and Digital phones were configured as stations in Avaya Communication Manager.

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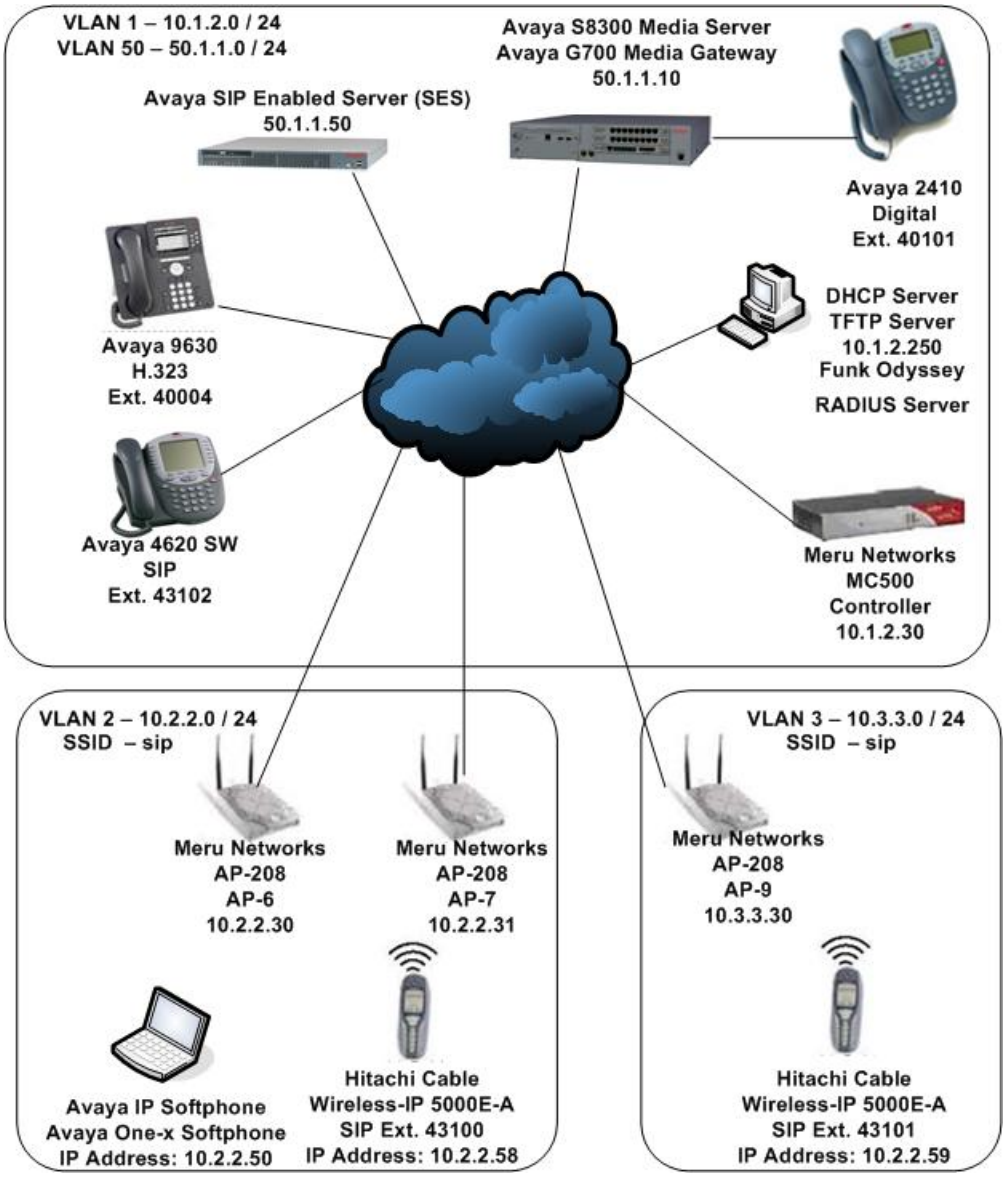

Figure 1: Hitachi Cable WIP 5000E-A SIP Telephone Test Environment

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2. Equipment and Software Validated

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

Equipment	Software
Avaya S8300 Media Server	3.1.2 (R013x.01.2.632.1)
Avaya G700 Media Gateway • MM711 Analog Media Module • MM712 DCP Media Module	FW: 25.28.0 Vintage 30 Version 84 Vintage 3 Version 7
Avaya SIP Enablement Services (SES) Server	3.1.114
Avaya 4600 Series IP Telephones (SIP)	2.2.2
Avaya 9600 Series IP Telephones (H.323)	1.2
Avaya 2410 Digital Telephone	N/A
Avaya One-X IP Softphone	2.1 SP1
Avaya IP Softphone	5.2 SP1
Meru Networks, MC500 Controller	3.3
Meru Networks AP208	3.3
Hitachi Cable WIP 5000E-A SIP Telephone	Software : 2.4.8 LA1 Boot Rom : 1.1.4
Microsoft Windows 2003 DHCP Server	N/A

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3. Configuring Avaya Communications Manager and Avaya SIP Enablement Services Server

All of the information needed to configure SIP stations on Avaya Communication Manager and Avaya SIP Enablement Services Server can found in **Section 10** documents [**1**] and [**2**]. No additional or special configurations were needed in order for the Hitachi Cable WIP 5000E-A SIP Telephone to interoperate with Avaya Communication Manager or Avaya SIP Enablement Services Server. There are a few parameters that need to match the configuration on Avaya Communication Manager and they are detailed below. All of the commands shown below were executed from system administration terminal of Avaya Communication Manager.

Step	Description
1.	Use the "**display system-parameters customer-options**" command to verify the value assigned to "**Maximum Off-PBX Telephones - OPS**" has sufficient capacity to support the number of SIP stations that will be supported.

```
display system-parameters customer-options                    Page   1 of  10
                              OPTIONAL FEATURES

     G3 Version: V13
       Location: 1                              RFA System ID (SID): 1
       Platform: 13                             RFA Module ID (MID): 1

                                                              USED
                                 Platform Maximum Ports: 900   70
                                       Maximum Stations: 450   29
                                Maximum XMOBILE Stations: 0     0
                    Maximum Off-PBX Telephones - EC500: 0     0
                    Maximum Off-PBX Telephones -   OPS: 100   20
                    Maximum Off-PBX Telephones - SCCAN: 0     0

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


ESC-x=Cancel Esc-e=Submit Esc-p=Prev Pg Esc-n=Next Pg Esc-h=Help Esc-r=Refresh
```


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Step	Description
2.	Use the **"change ip-network-region"** command to verify the **MEDIA PARAMTERS, UDP Port Min** and **UDP Port Max** match those configured in **Section 5.4 Step 4**. The Hitachi Cable WIP 5000E-A SIP Telephone **RTP RTCP** web page calls these parameters **RTP Port Min** and **RTP Port Max**. Verify the **DIFFSERVER/TOS PARAMTERS**, **Call Control PHB Value** and **Audio PHB Value** match those configured in **Section 5.4 Step 8**. The Hitachi Cable WIP 5000E-A SIP Telephone **Network Profile** web page calls these parameters **DiffServ Signal** and **DiffServ Media**.

```
change ip-network-region 1                                    Page   1 of  19
                              IP NETWORK REGION
  Region: 1
Location:         Authoritative Domain: devcon.com
    Name:
MEDIA PARAMETERS                Intra-region IP-IP Direct Audio: yes
      Codec Set: 1              Inter-region IP-IP Direct Audio: yes
   UDP Port Min: 2048                     IP Audio Hairpinning? n
   UDP Port Max: 3327
DIFFSERV/TOS PARAMETERS                RTCP Reporting Enabled? y
 Call Control PHB Value: 46      RTCP MONITOR SERVER PARAMETERS
        Audio PHB Value: 46       Use Default Server Parameters? y
        Video PHB Value: 26
802.1P/Q PARAMETERS
 Call Control 802.1p Priority: 6
        Audio 802.1p Priority: 6
        Video 802.1p Priority: 5      AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS                                       RSVP Enabled? n
  H.323 Link Bounce Recovery? y
 Idle Traffic Interval (sec): 20
   Keep-Alive Interval (sec): 5
            Keep-Alive Count: 5


ESC-x=Cancel Esc-e=Submit Esc-p=Prev Pg Esc-n=Next Pg Esc-h=Help Esc-r=Refresh
```


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4. Configure the Meru Networks MC500 Controller

The following steps detail the initial configuration for the Meru Networks wireless network used for the compliance testing.

Step	Description

1.	To perform the initial configuration on the Meru Networks MC500 Controller, setup a serial connection from a PC or laptop. Setup a terminal session with the following parameters:
	• 115200 baud
	• 8 bits
	• no parity
	• 1 stop bit
	
	Log in to the Meru Networks MC500 Controller using default credentials which can be obtained from the Meru Networks MC500 Controller documentation. Assign a **host name**, **IP address**, and **default gateway** to the MC500 Controller. In addition, specify the IP address of the **DHCP server**. This enables DHCP relay on the MC500 Controller to allow dynamic IP addressing for the wireless IP endpoints.
	
	`MC500# configure terminal`
	`MC500(config)# hostname MC500`
	`MC500(config)# ip address 10.1.2.30 255.255.255.0`
	`MC500(config)# ip default-gateway 10.1.2.1`
	`MC500(config)# ip dhcp-server 10.1.2.250`

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Step	Description

2.	Configure the three Access Points (APs) in the WLAN configuration depicted in **Figure 1**. AP-6, AP-7 and AP-9 are in different subnets than the MC500 Controller. Therefore these APs are configured for Layer 3 connectivity, which requires the MC500 Controller IP address to be specified.
	
	`MC500(config)# ap 6`
	`MC500(config)# description AP-6`
	`MC500(config)# mac-address 00:0c:e6:00:40:58`
	`MC500(config-ap)# connectivity l3-preferred`
	`MC500(config-ap-connectivity)# ip address 10.2.2.30 255.255.255.0`
	`MC500(config-ap-connectivity)# ip default-gateway 10.2.2.1`
	`MC500(config-ap-connectivity)# controller ip 10.1.2.30`
	`MC500(config-ap-connectivity)# end`
	
	`MC500(config)# ap 7`
	`MC500(config)# description AP-7`
	`MC500(config)# mac-address 00:0c:e6:00:40:6c`
	`MC500(config-ap)# connectivity l3-preferred`
	`MC500(config-ap-connectivity)# ip address 10.2.2.31 255.255.255.0`
	`MC500(config-ap-connectivity)# ip default-gateway 10.2.2.1`
	`MC500(config-ap-connectivity)# controller ip 10.1.2.30`
	`MC500(config-ap-connectivity)# end`
	
	`MC500(config)# ap 9`
	`MC500(config)# description AP-9`
	`MC500(config)# mac-address 00:0c:e6:00:3e:e1`
	`MC500(config-ap)# connectivity l3-preferred`
	`MC500(config-ap-connectivity)# ip address 10.3.3.30 255.255.255.0`
	`MC500(config-ap-connectivity)# ip default-gateway 10.3.3.1`
	`MC500(config-ap-connectivity)# controller ip 10.1.2.30`
	`MC500(config-ap-connectivity)# end`

3.	The wireless IP endpoints that register with Avaya SIP Enablement Services Server are assigned to vlan 2 and vlan 3. Create two vlans (**vlan2** and **vlan3**) with a tag of "**2**" and "**3**", respectively. Assign an IP address, default gateway, and DHCP server to the VLAN interface. This enables 802.1Q trunking on the MC500 Controller.
	`MC500(config)# vlan vlan2 tag 2`
	`MC500(config-vlan)# ip address 10.2.2.35 255.255.255.0`
	`MC500(config-vlan)# ip default-gateway 10.2.2.1`
	`MC500(config-vlan)# ip dhcp-server 10.1.2.250`
	`MC500(config-vlan)# exit`
	
	`MC500(config)# vlan vlan3 tag 3`
	`MC500(config-vlan)# ip address 10.3.3.35 255.255.255.0`
	`MC500(config-vlan)# ip default-gateway 10.3.3.1`
	`MC500(config-vlan)# ip dhcp-server 10.1.2.250`
	`MC500(config-vlan)# exit`

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Step	Description

4.	Configure the wireless IP endpoints to use WEP encryption, create a security profile that will be assigned to the ESSID in **Step 5**. Security profile **wep** was configured to support WEP encryption. The Hitachi Wireless IP5000 telephones must match the following settings in order to gain access to the wireless network. These are the same settings as **Section 5.2 Step 3**. Three different security schemas were tested WEP, WPA-PSK and 802.1X using Radius. All three security profiles were configured but tested independently by modifying the **"security-profile"** command under the ESSID configuration in **Step 5**.
	
	WEP Configuration
	`MC500(config)# security-profile  wep`
	`MC500(config-security)# allowed-l2-modes wep`
	`MC500(config-security)# encryption-modes wep64`
	`MC500(config-security)# static-wep key 0x3131313131`
	`MC500(config-security)# static-wep key-index  1`
	`MC500(config-security)# exit`
	
	WPA-PSK Configuration
	`MC500(config)# security-profile  wpa`
	`MC500(config-security)# allowed-l2-modes wpa-psk`
	`MC500(config-security)# encryption-modes tkip`
	`MC500(config-security)# psk key merumerumerumeru`
	`MC500(config-security)# exit`
	
	802.1X Configuration
	`MC500(config)# security-profile  Radius`
	`MC500(config-security)# allowed-l2-modes 802.1x`
	`MC500(config-security)# encryption-modes wep128`
	`MC500(config-security)# 8021x-network-initiation`
	`MC500(config-security)# radius-server primary  Radius-Srv`
	`MC500(config-security)# exit`
	
	Note: The 802.1X Configuration also requires the additional configuration of a Radius Server object.
	
	`MC500(config)# radius-profile Radius-Srv`
	`MC500(config-radius)# description Radius-Srv`
	`MC500(config-radius)# ip-address 10.1.2.250`
	`MC500(config-radius)# key meru`
	`MC500(config-radius)# port 1812`
	`MC500(config-radius)# exit`

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Step	Description

5.	Create **ESSID *sip*** and assign security profile ***wep*** that was created in the previous step. In order to support the other encryption modes replace the keyword **wep**, with the name of the other security profiles.
	
	`MC500(config)# essid  sip`
	`MC500(config-essid)# security-profile wep`
	`MC500(config-essid)# vlan support  configured-vlan-only`
	`MC500(config-essid)# ssid  sip`
	`MC500(config-essid)# ap-discovery join-virtual-ap`
	`MC500(config-essid)# exit`
	
	In order to support the Radius server the additional commands need to be added under the ESSID. This is only needed for the 802.1X configuration.
	`MC500(config)# essid sip`
	`MC500(config-essid)# vlan support radius-and-configured-vlan`
	`MC500(config-essid)# exit`

6.	Save the newly configured information to the Meru Networks MC500 Controller and reload it.
	
	`MC500# copy running-config startup-config`
	`MC500# reload all`

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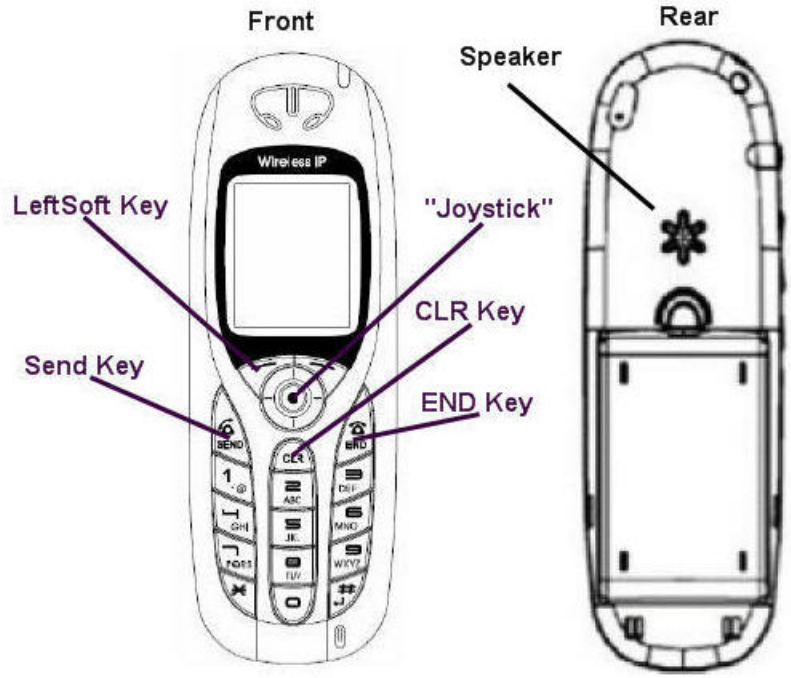
5. Configure the Hitachi WIP 5000E-A SIP Telephone

The following steps describe the configuration process for the Hitachi Cable WIP 5000E-A SIP Telephone to connect to a wireless network and register with Avaya SIP Enablement Services (SES) Server.

5.1. Administering the Initial Configuration of the Hitachi Cable WIP 5000E-A SIP Telephone

In order to connect the Hitachi Cable WIP 5000E-A SIP Telephone to a wireless network the user must first configure the telephone using the phone menu to create the initial WiFi binding. Once the Hitachi Cable WIP 5000E-A SIP Telephone is connected with an IP address, the user can complete the configuration process using the Web Server built into the telephone. Additionally, a user may use a USB cable to upload a configuration file for the WiFi binding. There are some vendor specific configuration dependencies of the configuration file, consult with Hitachi support for specific inquiries.

Step	Description
1.	A picture of the Hitachi Cable WIP 5000E-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 **Section 10** documents [**3**] and [**4**]. To power on the Hitachi Cable WIP 5000E-A SIP Telephone press and hold the **"END Key"** until the phone powers up. Also note the asterisk shaped speaker on the rear side of the phone, which indicates that this phone is the Hitachi Cable WIP-5000E-A SIP Telephone. 

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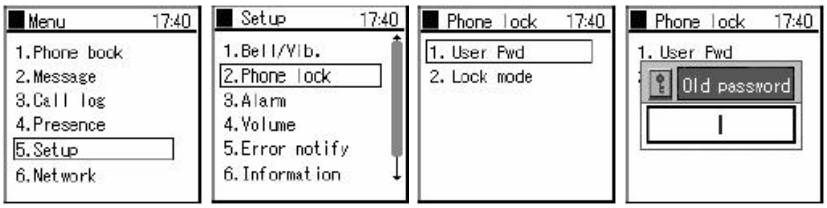
Step	Description
2.	Once the phone has powered up, press the **"LeftSoft Key"** to enter the menu. From the **Menu** screen, use the key sequence **"5", "2", "1" (Setup→Phone lock→User Pwd)** in order to obtain access to the **Admin** menu. Enter the correct password for accessing the **Admin** menu and press the **"Joystick"** in. A password is required to access this menu, for additional information refer to **Section 10** [**4**].  The user is now presented with the **Admin** menu.

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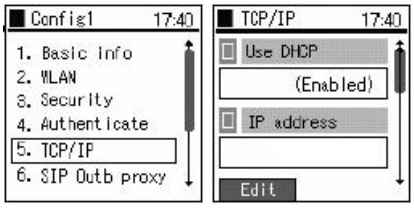
5.2. Administering the Network Configuration for Hitachi Cable WIP 5000E-A SIP Telephone

Step	Description
1.	From the **Admin** menu, press **"1"** to select **"Network config"**. From the **Network config** menu use the key sequence **"1", "1", "2" (Network config→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, refer to **Figure 1**.
2.	From the **Config1** menu press **"5"** to configure the TCP/IP parameters for the Hitachi Cable WIP 5000E-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. 

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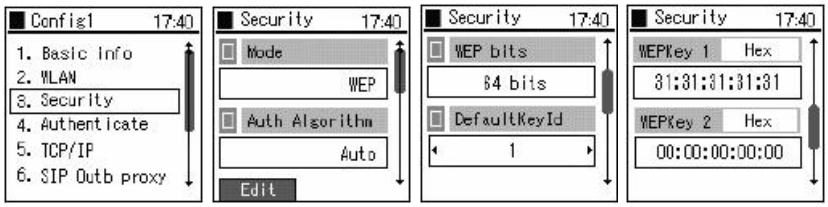
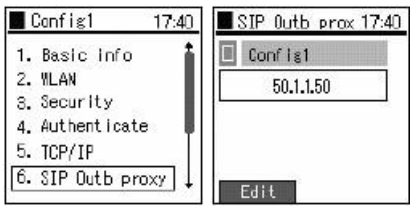
Step	Description
3.	From the **Config1** menu, press **"3"** to administer the **Security** configuration. Press the **"LeftSoft Key"** and select **Edit** to modify the security mode. The three supported modes on the Hitachi Cable WIP 5000E-A Handset are **"None"**, **"WEP"**, and **"WPA-PSK"**. Using the **"Joystick"** press left/right until the **"WEP"** option is selected. Then use the **"Joystick"** pressing up/down until the **"WEP bits"** option is selected and specify the correct number of bits used for encrypting, **64 bits** was used. Using the **"Joystick"** press up/down until the **"WEPKey 1"** option is highlighted. Using the key pad specify the Hex key assigned to the SSID. Press the **"Joystick"** in to complete the Security configuration. This Hex value must match the one configured on the wireless network (refer to **Section 4 Step 4**). For the procedures to enable the Hitachi Cable WIP 5000E-A SIP Telephone to support WPA-PSK encryption and 802.1X Authentication please refer to **Section 10** documents [**1**] and [**2**]. 

5.3. Administering the SIP Configuration on Hitachi Cable WIP 5000E-A SIP Telephone

Step	Description
1.	From the **Config1** menu, press **"6"** to specify the **SIP Outb proxy**. Use the **"LeftSoft Key"** and select **Edit**. Enter **50.1.1.50**, which is the IP Address of the Avaya SIP Enablement Services Server. 

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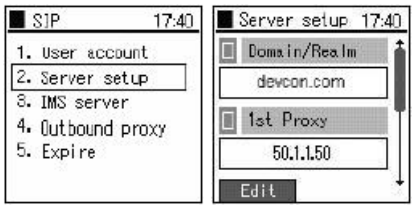
Step	Description
2.	From the **Network config** menu, press **"2"**, **"1" (SIP-->User Account)** to specify the **SIP** and **User Account** information. Press the **"LeftSoft Key"** and select **Edit** to input the **User Account** information into the Hitachi Cable WIP 5000E-A SIP Telephone. Using the **"JoyStick"** navigate by pressing up/down and enter the following information. The **URL scheme** must be selected using the **"JoyStick"** by toggling left/right until **SIP** is configured. Press the **"JoyStick"** inward to input the newly specified parameters. In order to configure the **User ID, User Password** and **URL Scheme** the operator must navigate by pressing the "**Joystick**" down until those options appear. • **Display Name 43100** • **Phone Number 43100** • **User ID 43100** • **User Password 123456** • **URL Scheme SIP**
3.	From the **SIP** menu, press **"2"** to enter the **Server setup** configuration menu. Press the **"LeftSoft Key"** and select **Edit** to configure the **Server setup** information. Using the keypad configure the **Domain/Realm**, **1st Proxy** and **1st Registrar** information. Press the **"JoyStick"** inward to input the newly specified parameters. To navigate to the **1st Registrar** press the "**Joystick**" down to scroll the screen. The Domain/Realm is the Domain name of the Avaya SIP Enablement Services Server. The 1st Proxy and 1st Registrar are the IP address of the Avaya SIP Enablement Services Server, **50.1.1.50** in the sample network. • **Domain/Realm devcon.com** • **1st Proxy 50.1.1.50** • **1st Registrar 50.1.1.50** 

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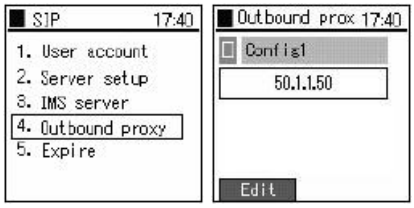
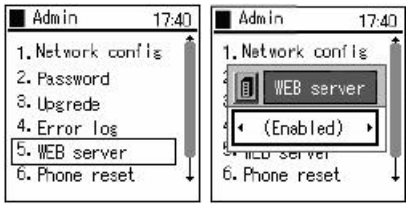
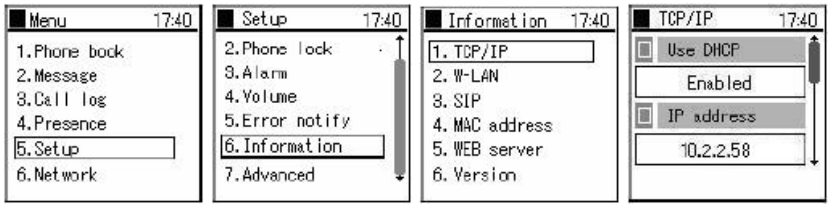
Step	Description
4.	From the **SIP** menu, press **"4"** to enter the **Outbound proxy** configuration menu. Press the **"LeftSoft Key"** and select **Edit** to input the **Outbound proxy** information. Press the **"JoyStick"** inward to input the newly specified parameters. Press the **"END Key"** to exit the **Admin** menu of the Hitachi Cable WIP 5000E-A SIP Telephone. The **Outbound proxy** is the IP address of the Avaya SIP Enablement Services Server, **50.1.1.50** in the sample network. 

5.4. Administering Additional Configuration Information on Hitachi Cable WIP 5000E-A SIP Telephone

This section details other configurations necessary for interoperability between the Hitachi Cable WIP 5000E-A SIP Telephones with Avaya SIP Enablement Services Server. The following settings are configured by using the Web server built-in to the Hitachi Cable WIP 5000E-A SIP Telephone and require a web browser (such as Internet Explorer). Only modifications made to default values are shown.

Step	Description
1.	In order to verify the Web server is running on the Hitachi Cable WIP 5000E-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 to the Hitachi Cable WIP 5000E-A SIP Telephone use the key sequence **"5"**, **"6"**, **"1" (Setup→Information→TCP/IP)** from the **Menu** menu. 

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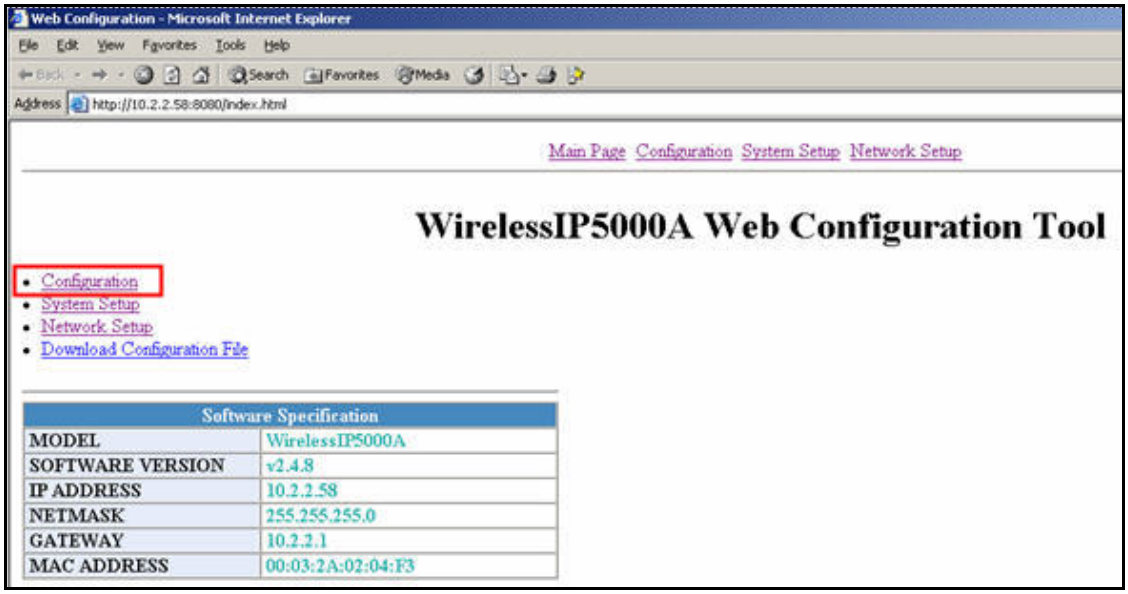
Step	Description
2.	From a web browser (in the sample network this was done from the DHCP server), place the IP address of the telephone into the URL address field specifying the port 8080. The web server inside the Hitachi Cable WIP 5000E-A SIP Telephone operates at port 8080. The URL string to access the web server of a telephone (which has an IP address of 10.2.2.58) is http://10.2.2.58:8080. 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, refer to **Section 10** [**4**]. Click **"Configuration"**. 

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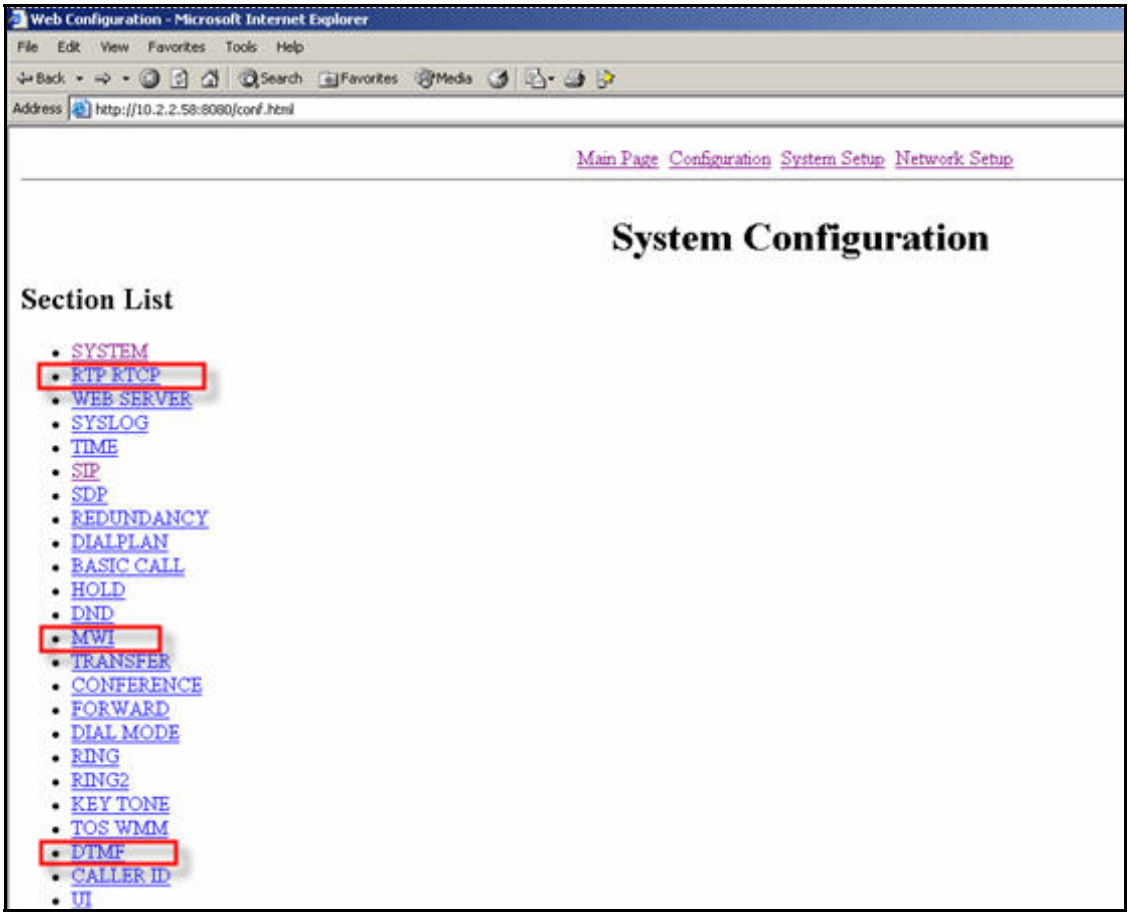
Step	Description
3.	From the **System Configuration** web page, three options need to be configured. Click **"RTP RTCP"**, **"MWI"**, and **"DTMF"** and configure the following parameters. 

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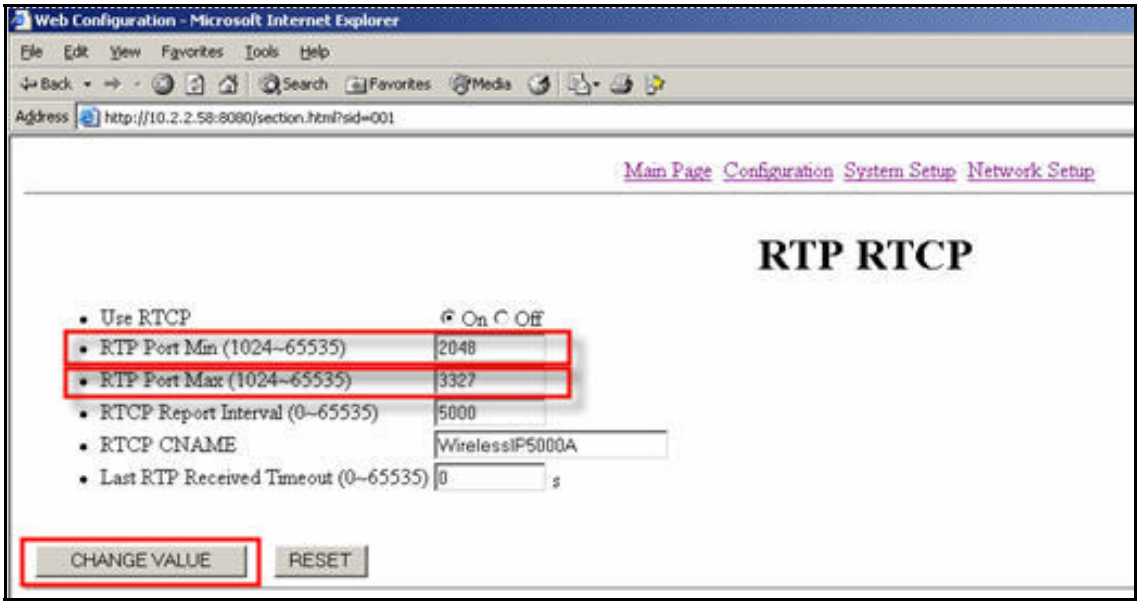
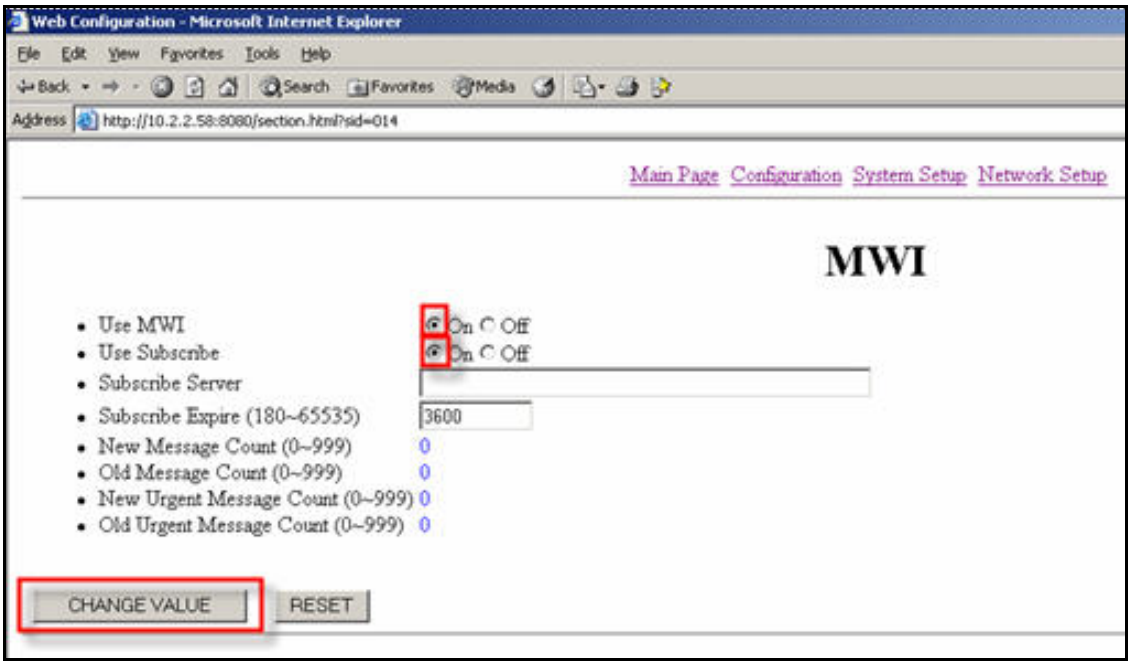
Step	Description
4.	From the **RTP RTCP** web page configure the **"RTP Port Min (1024~65535)"** and **"RTP Port Max (1024~65535)"** parameter to match those configured on Avaya Communications Manager **ip-network-region** in **Section 3 Step 2**. Click **"CHANGE VALUE"**. 
5.	From the **MWI** web page turn on **"Use MWI"** and **"Use Subscribe"**. Click **"CHANGE VALUE"**. 

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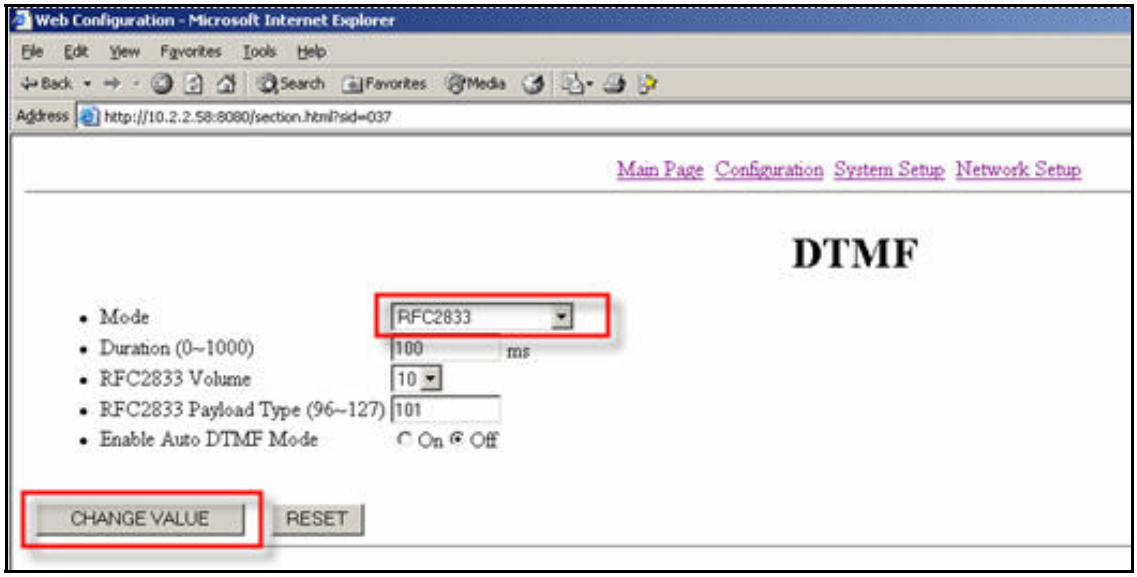
Step	Description
6.	From the **DTMF** web page, use the pull down menu for the **Mode** field and select **"RFC2833"**. Click **"CHANGE VALUE"**. 

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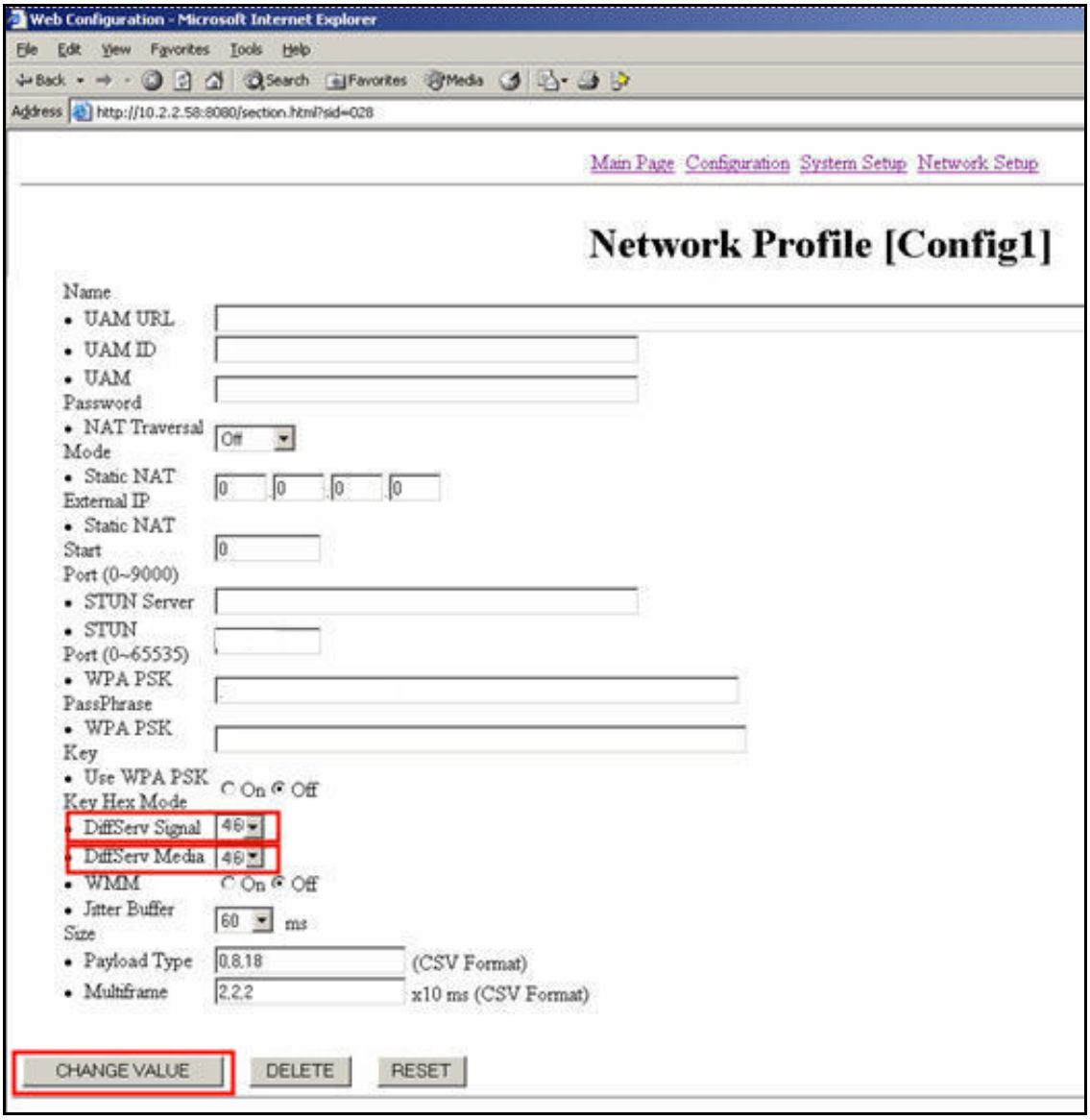
Step	Description
7.	From the **Main Page** (refer to **Step 2**) click **"Network Setup"**. From the **Network Setup** web page many additional configurations options are presented to the user. Using the navigation bars, scroll down to the second half of the web page and using the pull down menu configure **"DiffServ Signal"** and **"DiffServ Media"** for a value of **46**. Click **"CHANGE VALUE"**. The DiffServ values configured here should match those configured under **ip-network-region** on Avaya Communication Manager detailed in **Section 3 Step 2**. 

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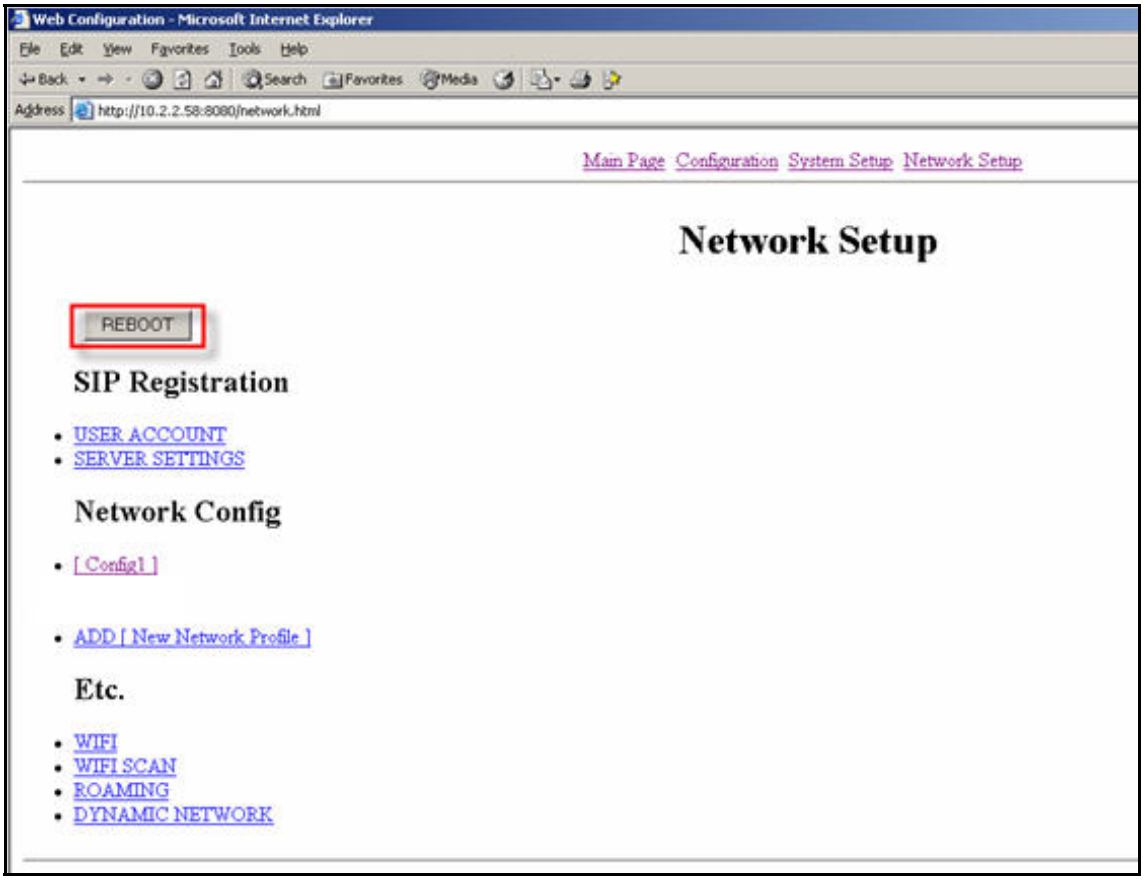
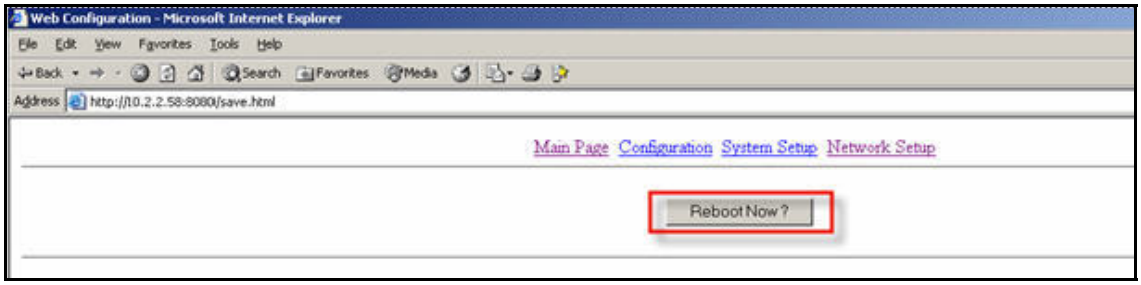
Step	Description
8.	Return to the **Network Setup** web page and click **"Reboot"**. Click **"Reboot Now ?"**. In order for the new configuration to take effect the phone needs to be rebooted.





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6. Interoperability Compliance Testing

The interoperability compliance testing focused on verifying the capability of the Hitachi Cable WIP 5000E-A SIP Telephone to register with Avaya Communications Manager and Avaya SIP Enablement Services Server. Testing also verified the interoperability between Hitachi Cable WIP 5000E-A SIP Telephone, Avaya SIP phones, Avaya H.323 phones, Avaya Softphones (SIP and H.323) and Avaya Digital 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.

6.1. General Test Approach

The general test approach was to place and receive calls through the Hitachi Cable WIP 5000E-A SIP Telephone to and from Avaya SIP, Avaya H.323 and Avaya Digital telephones. Specific telephony features were also tested including multiple call appearances, proper caller ID information reporting, hold, transfer, conference call participation, and voice mail. Both G.711MU and G.729AB codecs were tested.

6.2. Test Results

The Hitachi Cable WIP 5000E-A SIP Telephone successfully completed the Avaya compliance testing. The compliance testing focused on verifying the capability to place calls between the Avaya and Hitachi telephones. Specific calling features included attended and unattended transfers, conference call participation, voice mail notification, DTMF tone interpretation and DHCP support. Network features tested included WEP(64 and 128 bit) and WPA-PSK encryption, 802.1X authentication using TTLS and 802.1X authentication using PEAP. Layer-3 (DiffServ/TOS) values were verified to be properly assigned to traffic being transmitted from the Hitachi Cable WIP 5000E-A SIP Telephone through the examination of packet captures. The Hitachi Cable WIP 5000E-A SIP Telephone was verified to successfully roam between Layer 2 and Layer 3 networks while maintaining active calls with good voice quality through subjective measures.

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7. Verification Steps

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

7.1. Avaya Communication Manager and Avaya SIP Enablement Services Server Verification Steps

- Place calls with the Hitachi Cable WIP 5000E-A SIP Telephone. Exercise calling features such as conference, transfer and hold and verify proper operation of those features.
- Log in to Avaya Communication Manager and verify that the stations are configured as **"Off-PBX OPS stations"** (refer to **Section 10** [**1**]).
- Log in to the Avaya SIP Enablement Services Server and verify that the SIP stations haven properly administered (refer to **Section 10** documents [**1**] and [**2**]).
- Ensure that the Avaya SIP Enablement Services Server has been updated after any new stations have been configured.

7.2. Hitachi Cable WIP 5000E-A SIP Telephone Verification Steps

- Verify that the Hitachi Cable WIP 5000E-A SIP Telephone has the correct SSID configured. Use the steps outlined in **Section 5.2** to confirm all of the settings are correct.
- Verify that the Hitachi Cable WIP 5000E-A SIP Telephone has an IP address assigned and is configured for DHCP (refer to **Section 5.4 Step 1**).
- Verify that the Hitachi Cable WIP 5000E-A SIP Telephone has the correct SIP server configuration. Use the steps outlined in **Section 5.3** to confirm all the settings and IP address information are correct.
- Verify that the Hitachi Cable WIP 5000E-A SIP Telephone has the correct RTP port information configured. First check the settings configured on the Avaya Communication Manager (refer to **Section 5 Step 2**) and verify the Hitachi Cable WIP 5000E-A SIP Telephone is configured to use those same settings (refer to **Section 5.4 Step 4**).

8. Support

For technical support on the Hitachi Cable WIP 5000E-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

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9. Conclusion

These Applications Notes described the configuration steps to make the Hitachi Cable WIP 5000E-A SIP Telephone interoperate with Avaya Communication Manager and Avaya SIP Enablement Services Server using Meru Networks MC500 and Meru Networks AP-208 wireless networking hardware.

10. Additional References

[1] *Administrator Guide for Avaya Communication Manager*, May 2006, Issue 2.1 Document Number 03-300509

[2] *Installing and Administering SIP Enablement Services R3.1.1*, August 2006, Issue 2.0, Document Number 03-600768

[3] *WirelessIP 5000 Administrator Manual*, Document Number TD61-2896A

[4] *WirelessIP 5000 User's Manual*, Document Number TD61-2894A

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