



Avaya Solution & Interoperability Test Lab

Application Notes for Extreme Networks Summit 300-48 and Altitude 300 with Avaya Communication Manager, Avaya Wireless Clients, Avaya IP Softphones and Avaya IP Telephones - Issue 1.1

Abstract

These Application Notes present a sample configuration for Extreme Networks Summit 300-48, Altitude 300, Avaya IP Softphones (wireless clients), and Avaya IP telephones with an Avaya IP Telephony infrastructure. The objective of the test was to evaluate interoperability of the Extreme Networks Altitude 300 wireless access points and Avaya wireless clients for Avaya IP Softphones as well as the Power over Ethernet (PoE) functionality between the Extreme Networks Summit 300-48 and Avaya IP telephones. All test cases completed successfully. Information in these notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

The network diagram in **Figure 1** shows Extreme Networks' wireless and PoE solutions with the Avaya wireless client and the Avaya IP telephone. The Avaya S8300 Media Server with the Avaya G700 Media Gateway is connected to the Extreme Networks Summit48si. The Extreme Networks Altitude 300 wireless access point is connected to the Extreme Networks Summit 300-48. The Summit 300-48 is 802.3af PoE compliant and can provide power to Avaya IP telephones (for example, Avaya 4620), the Altitude 300, etc. The Avaya IP Softphone is installed on the laptop, and the laptop is installed with the Avaya 802.11a/b wireless card to communicate with the Altitude 300.

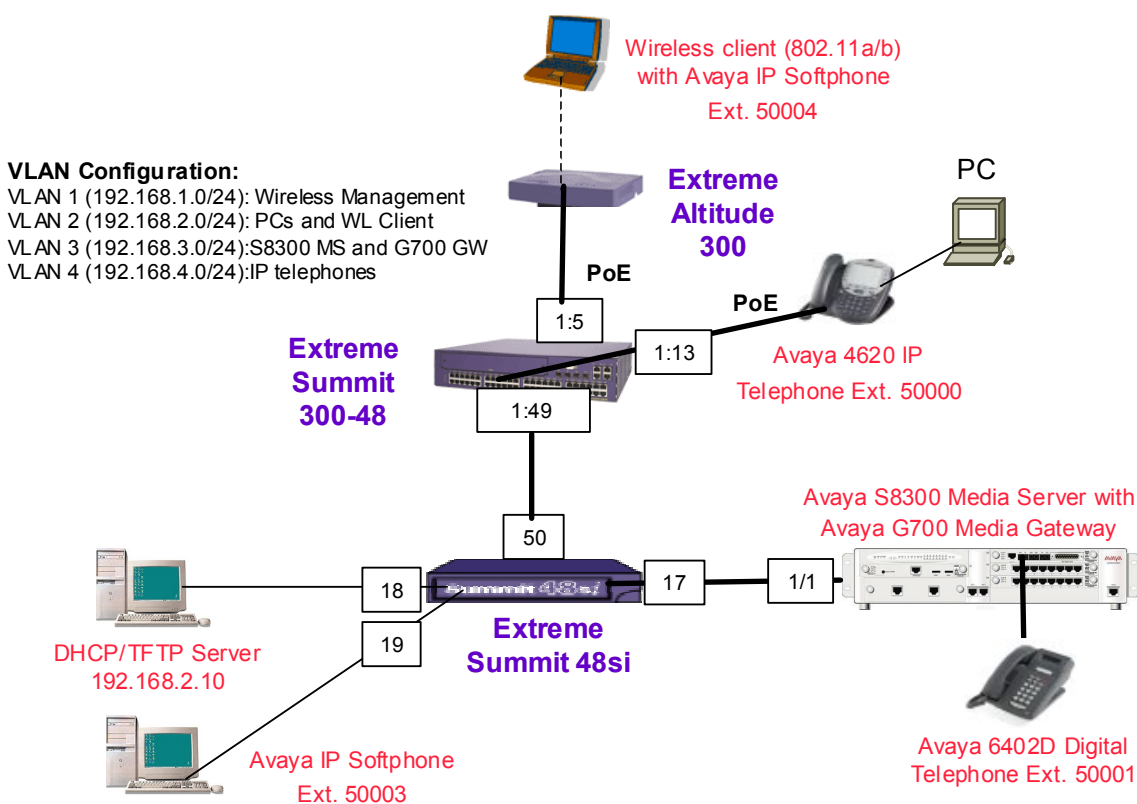


Figure 1: Network Configuration

The following sections focus on the wireless and PoE configuration on the Extreme Networks Summit 300-48, the Altitude 300 and the Avaya wireless clients using Avaya 802.11a/b wireless cards. Note that while testing was accomplished with the Avaya S8300 Media Server and Avaya G700 Media Gateway, the results are applicable to all Avaya Media Server and Media Gateway combinations.

2. Equipment and Software Validated

Table 1 below shows the versions used for the test configuration.

Network Component	Software Version
Avaya Communication Manager S8300 Media Servers	R012x.00.0.219.0
Avaya G700 Media Gateway	21.20.1
Avaya IP Softphone	4.1.36
Avaya 4620 IP Telephones	1.8.1
Avaya Utility for 802.11a/b	2.0-B14
Avaya 802.11a/b wireless card	2.0.306.0
Extreme Networks Summit48si Extremeware BootRom	7.1.1 (Build 11) 8.1
Extreme Networks Summit 300-48	6.2a-1.1.0 (Build 214)
Extreme Networks Altitude 300 Hardware revision: 01000001	Firmware obtained from Summit 300-48

Table 1: Software Versions

3. Configuring the Avaya S8300 Media Server and Avaya G700 Media Gateway

This section presents configuration steps for the Avaya S8300 Media Server and the Avaya G700 Media Gateway. It is assumed that appropriate license files and authentication files have been installed on the Avaya S8300 Media Server, and that login and password credentials are available to the reader.

3.1. Configuring the Interface for the Avaya S8300 Media Server

The Avaya S8300 Media Server is configured using a web interface. To access the web interface, connect a computer to the services port of the Avaya S8300 Media Server. The services port uses the pre-configured IP address 192.11.13.6 with mask 255.255.255.252. Configure the computer's IP address as 192.11.13.5 with mask 255.255.255.252. Connect the computer's Ethernet interface to the services port with a crossover Ethernet cable. Launch a web browser with the URL <http://192.11.13.6>. After login, click **Launch Maintenance Web Interface**, a main menu is presented along the left hand side. Click **Configure Server** from the lower left of this main menu. The following screen shows that the Avaya S8300 Media Server is configured with IP address 192.168.3.5 and default gateway 192.168.3.1. Note that the IP address of the Avaya S8300 Media Server must be on the same network as configured on the Avaya G700 Media

Gateway. VLAN 3 (network 192.168.3.0/24) is configured on the Avaya G700 Media Gateway in Section 3.2.2.

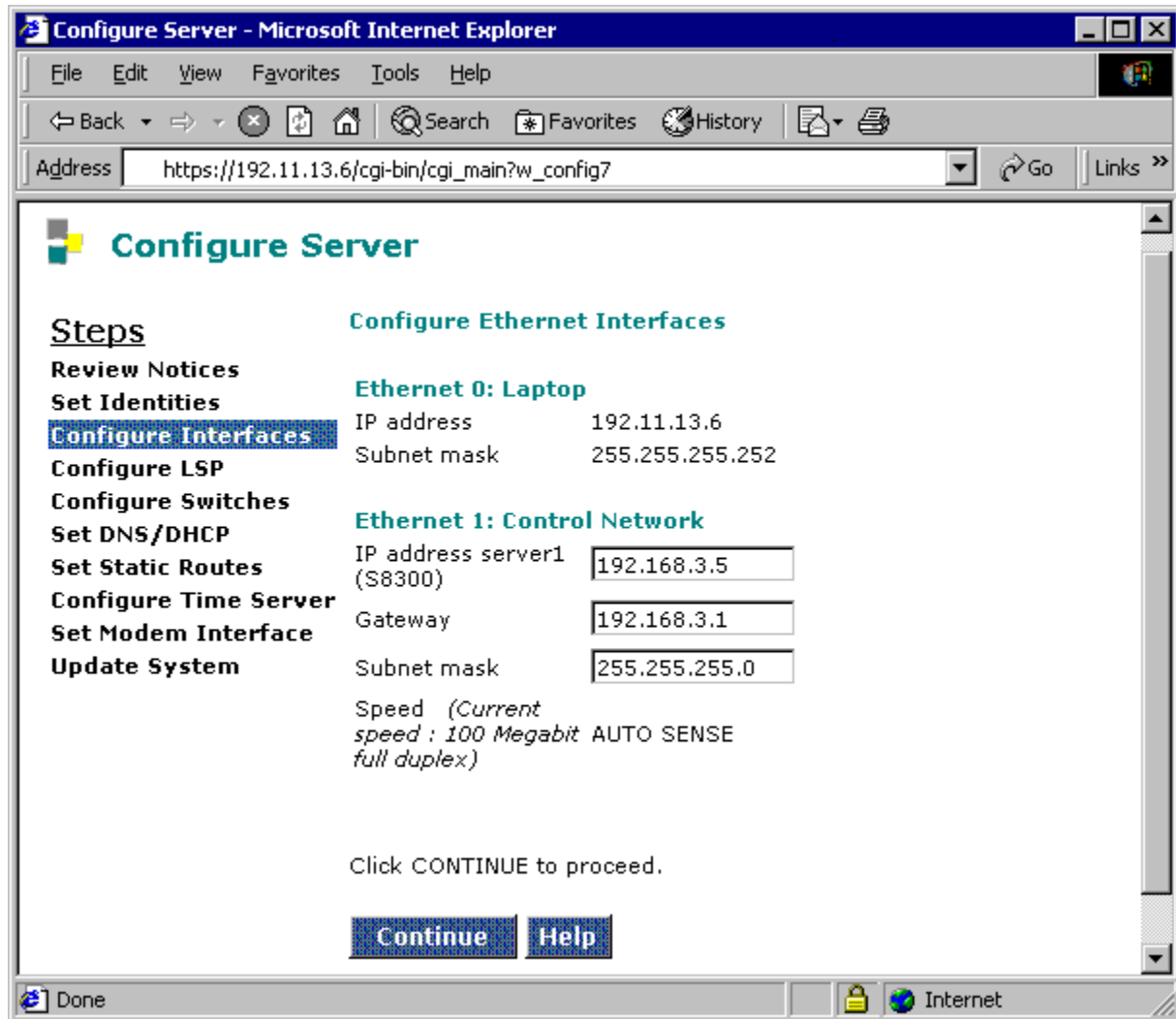


Figure 2: Avaya S8300 Media Server Configuration

3.2. Configuring the Avaya G700 Media Gateway

This section illustrates the steps necessary to configure the network identities of the following components within the Avaya G700 Media Gateway:

- Avaya P330 stack processor (resident on the G700 Media Gateway – Layer 2 switch)
- Avaya G700 Media Gateway Processor (MGP)
- VoIP v0 Module (resident on the Avaya G700 Media Gateway motherboard)
- Avaya G700 Media Gateway Control List

Note that the Avaya G700 MGP and VoIP v0 as well as the Avaya S8300 Media Server (Section 4.1) must be configured on the same VLAN. VLAN 3 is used in the sample configuration.

3.2.1. Configuring the P330 Stack on the Avaya G700 Media Gateway

Connect a COM port on a computer to the console port and login in with the proper user name and password. The following screen shows the **inband** interface on the P330 Stack, which is configured with IP address 192.168.3.2 on VLAN 3.

```
Cajun-P330-1(super)# set interface inband 3 192.168.3.2 255.255.255.0
```

```
Management VLAN number set to 3
Interface inband IP address set.
You must reset the device in order for the change to take effect.
```

Perform the reset for the change to take effect. Log in again and use the **show interface** command to verify the IP parameters.

```
Cajun-P330-1(super)# show interface
```

Interface Name	VLAN	IP address	Netmask
-----	----	-----	-----
inband	3	192.168.3.2	255.255.255.0
ppp disabled	3	0.0.0.0	0.0.0.0

Use the command **set ip route** to configure a default gateway and **show IP route** to verify the configuration.

```
Cajun-P330-1(super)# set ip route 0.0.0.0 192.168.3.1
destination = 0.0.0.0 gateway = 192.168.3.1
```

```
Cajun-P330-1(super)# show ip route
```

Destination	Gateway
-----	-----
0.0.0.0	192.168.3.1
0.0.0.0	0.0.0.0

Port 1/1 on the P330 is connected to the Summit48si. It is recommended to configure port 1/1 to native VLAN 3 with **Dot1Q** enabled, and **vlan-binding-mode** to **static**. The following screens show the configuration:

```
Cajun-P330-1(super)# set port vlan 3 1/1
```

```
VLAN 3 modified.
```

```
VLAN Mod/Ports
```

```
-----
3 1/1
```

```
Cajun-P330-1(super)# set trunk 1/1 dot1q
```

```
Dot1Q VLAN tagging set on port 1/1.
```

```
Cajun-P330-1(super)# set port vlan-binding-mode 1/1 static
```

```
Set Port vlan binding method:1/1
```

Use the command **show trunk** to verify the configuration.

```
Cajun-P330-1(super)# show trunk 1/1
```

Port	Mode	Binding mode	Native vlan	Vlans allowed on trunk
1/1	dot1q	statically bound	3	3

3.2.2. Configuring Avaya G700 Media Gateway Processor (MGP)

The next step is to configure the Avaya G700 Media Gateway Processor (MGP). The MGP CLI can be accessed via the **session mgp** command from the P330 stack. The MGP can also be accessed directly once IP settings have been assigned to the MGP.

```
Cajun-P330-1(super)# session mgp
```

Enter configuration mode using the **configure** command.

```
Welcome to Media Gateway Processor
FW version 21.20.1
```

```
MG-???-1(configure)# configure
```

```
MG-???-1(configure)#
```

The format of the prompt is “Hostname-G700 Media Gateway number-Stack Number (mode)#”. In the examples shown, the hostname is MG. The hostname can be changed, if desired, using the **set hostname** command. The G700 Media Gateway number will be shown as question marks until the G700 Media Gateway has registered with its controller. Once registered, the prompt will show the G700 Media Gateway number administered within the Avaya S8300 Media Server. The stack number is shown as 1 because this is a single (i.e., not stacked) Avaya G700 Media Gateway. While interacting with the Avaya G700 MGP CLI, help is available by using the keyword help at any point in a command. The command **set interface mgp <vlan> <ip> <netmask>** can be used to set the IP parameters for the Avaya G700 Media Gateway. Perform **reset mgp** for the change to take effect.

```
G700-???-1(configure)# set interface mgp 3 192.168.3.12 255.255.255.0
```

The change will take effect after reboot.

```
MG-???-1(configure)# reset mgp
```

This command will perform a hard reset.

```
Do you want to continue (y/n)? y
```

Wait a short time (e.g., one minute) to allow the MGP reset to complete, and then use the **session mgp** command to reconnect to the MGP CLI from the P330 stack CLI. Verify the MGP configuration using the command **show interface mgp** from configuration mode.

```
MG-???-1(super)# show interface mgp
```

```
OPERATIONAL STATE: -- Currently in use --
```

INTERFACE	SRC	VLAN	IP ADDRESS	NETMASK	MAC ADDRESS
-----	---	----	-----	-----	-----
mgp	S	3	192.168.3.12	255.255.255.0	00-04-0D-02-09-18

Use the command **set ip route** to configure a static route. A default route is configured in the following screen.

```
MG-???-1(configure)# set ip route 0.0.0.0 0.0.0.0 192.168.3.1
```

Use the command **show ip route mgp** to verify the IP routing table.

```
MG-???-1(configure)# show ip route mgp
```

DESTINATION	MASK	GATEWAY	INTERFACE	(F/C/U)
-----	-----	-----	-----	-----
0.0.0.0	0.0.0.0	192.168.3.1	motfec0	(3/0/84)
192.168.3.0	255.255.255.0	192.168.3.12	motfec0	(101/0/0)

3.2.3. Configuring the VoIP Module on the Avaya G700 Media Gateway

The next step assigns an IP address to the integral voice-over-IP (VoIP) component resident on the Avaya G700 Media Gateway motherboard. This VoIP component is identified as “voip v0” to differentiate it from any (functionally equivalent) MM760 VoIP Media Modules installed in the media module bays (v1-v4). The VoIP v0 has a function analogous to the TN2302AP IP Media Processor circuit pack. The following command assigns an IP address to “voip v0”.

```
MG-???-1(configure)# set interface voip v0 192.168.3.11
```

Use the command **show ip interface voip v0** to verify the VoIP v0 configuration. Since the VoIP v0 uses the IP routing table of the MGP, static routes are not configurable for the VoIP v0.

```
MG-???-1(configure)# show interface voip v0
```

```
OPERATIONAL STATE: -- Currently in use --
```

INTERFACE	SRC	VLAN	IP ADDRESS	NETMASK	MAC ADDRESS
-----	---	----	-----	-----	-----
voip-v0	S	3	192.168.3.11	255.255.255.0	00-04-0D-02-23-18

In order to add the Avaya G700 Media Gateway to the Avaya S8300 Media Server, the serial number is required. Use the **show system** command to obtain its serial number.

```
MG-???-1(configure)# show system
```

```
...
MAC Address      : 00-04-0D-02-09-18
Serial No       : 02DR07750966
...
```

3.2.4. Configuring the Avaya G700 Media Gateway Control List

The Avaya G700 Media Gateway will be configured to register with the Avaya S8300 Media Server as its controller. The Avaya G700 Media Gateway maintains a list of controller IP addresses. In this sample configuration, a single IP address, the IP address of the Avaya S8300 Media server, will be added to this list. The command **set mgc list** is used as follows:

```
MG-???-1(configure)# set mgc list 192.168.3.5
```

Once the Avaya G700 Media Gateway has registered with its controller, the prompt will show the G700 Media Gateway number assigned by the active controller. The command **show mgc** displays the status of the H.248 link to the controller, as well as the contents of the controller list. The prompt shown below now includes the G700 Media Gateway number assigned by the controller upon registration of the G700 Media Gateway.

```
G700-001-1(super)# show mgc

CALL CONTROLLER STATUS
-----
Registered           : YES
Active Controller     : 192.168.3.5
H248 Link Status      : UP
H248 Link Error Code: 0x0

CONFIGURED MGC HOST
-----
192.168.3.5
...
```

3.3. Configuring Avaya S8300 Media Server for the Avaya G700 Media Gateway

Use the command **add media-gateway** on the Avaya S8300 Media Server to add the Avaya G700 Media Gateway with the following parameters (the Serial No is obtained from the **show system** command of the Avaya G700 MGP CLI in Section 4.2.3):

Type: G700
Serial No: 02DR07750966
Network Region: 1

Note that the Avaya G700 Media Gateway is assigned to Network Region 1.

Use the command **change media-gateway** to verify the registration status. The following output shows that the Avaya G700 Media Gateway has registered with the Avaya S8300 Media Server.

change media-gateway 1		Page 1 of 1	
		MEDIA GATEWAY	
Number: 1		IP Address: 192.168.3 .12	
Type: g700		FW Version/HW Vintage: 21 .20 .1 /0	
Name:		MAC Address: 00:04:0d:02:09:18	
Serial No: 02DR07750966		Encrypt Link? y	
Network Region: 1		Location: 1	
Registered? y		Controller IP Address: 192.168.3 .5	
		Site Data:	
...			

4. DHCP Server Configuration

The DHCP Server is configured to support the PCs as well as the Wireless Clients, and the Avaya IP telephones. When an IP telephone initially sends an untagged DHCP request (native VLAN 2), The DHCP server associates this request with the 192.168.2.0 scope and returns a reply with Option 176 string, instructing the IP telephone to enable 802.1Q tagging with VLAN ID 4 (as indicated in the first row of **Table 2** below). The IP telephone receiving this reply will release the supplied IP address and issue a new DHCP request with VLAN ID 4. The Summit48si will relay this request to the DHCP server. The DHCP server will reply with an IP address from the 192.168.4.0 scope as well as several parameters in the Option 176 string (as indicated in the second row of **Table 2** below). The IP telephones will use Option 176 parameters to register with the Avaya S8300 Media Server. Note that the computer will ignore the Option 176 values. Therefore, no new DHCP request is issued. **Table 2** shows the DHCP summary configuration:

DHCP Scope	Option 3 Router	Option 176 String	Notes
192.168.2.0	192.168.2.1	L2Q=1,L2QVLAN=4	For PCs and Wireless Client
192.168.4.0	192.168.4.1	MCIPADD=192.168.3.5,MCPORT=1719, TFTPSRVR=192.168.2.10	For Avaya IP telephones 192.168.3.5: S8300 Media Server

Table 2 – DHCP Configuration Summary

5. Configuring Avaya Wireless Client

In order to support the Avaya 802.11a/b card, the 802.11a/b driver must be installed on the laptop. Avaya Utility can be launched from **Start -> Avaya -> Avaya Client Utility**, or by clicking the wireless icon on the bottom of the screen; the following window will pop up. Select **Configuration** tab, **Basic** tab, and **mode**. Configure the mode to **802.11a** or **802.11b** to associate it with the Altitude 300's 802.11a or 802.11b/g interface. Note that the Altitude 300 comes with 802.11a and 802.11b/g interfaces. The following screen shows that **Mode 802.11a** is selected.

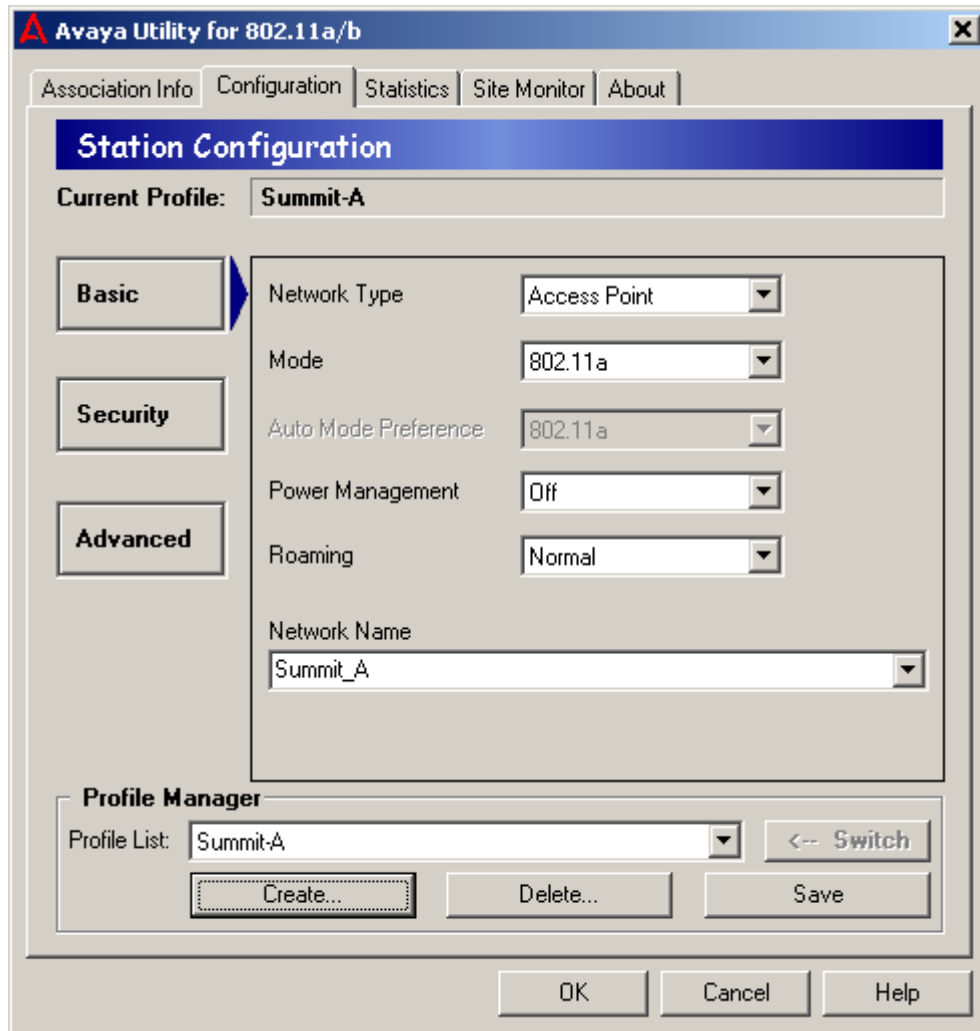
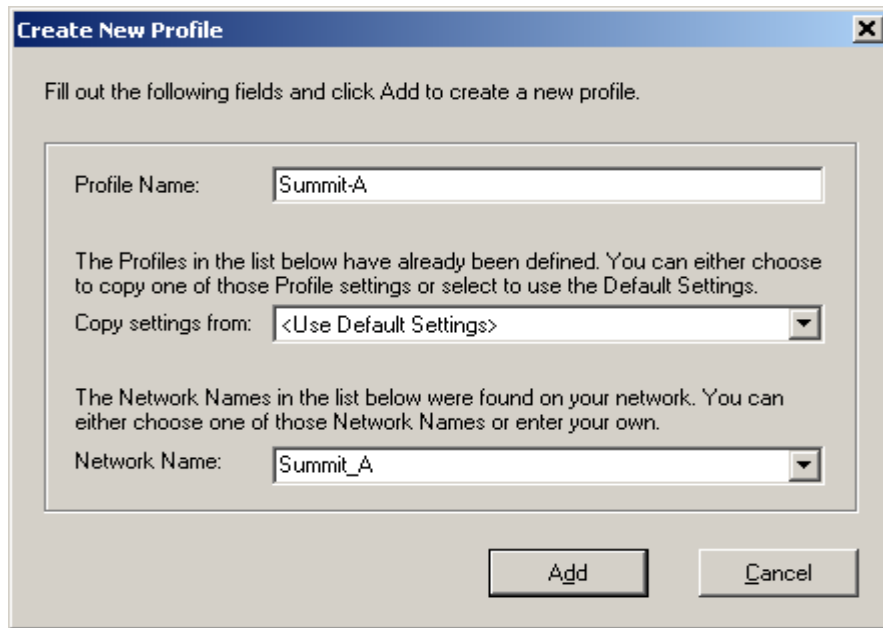


Figure 3: 802.11a/b Mode Configuration from Avaya Utility for 802.11a/b

Click **Create** button and create a profile named Summit-A with **Network Name** Summit_A, which matches the Network Name configured on the 802.11a interface of the Altitude 300 (See Section 7.2).



Create New Profile

Fill out the following fields and click Add to create a new profile.

Profile Name:

The Profiles in the list below have already been defined. You can either choose to copy one of those Profile settings or select to use the Default Settings.

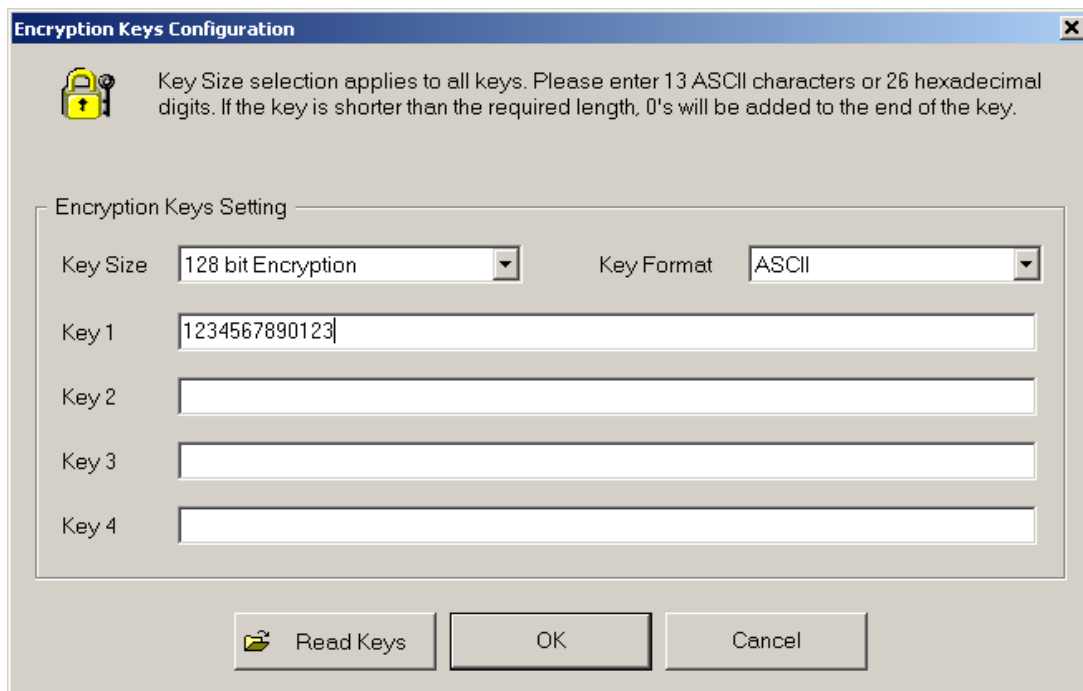
Copy settings from:

The Network Names in the list below were found on your network. You can either choose one of those Network Names or enter your own.

Network Name:

Figure 4: Create a Use Profile

Click **Add** button and the window will be closed. Click the **Security** tab in **Figure 3** and select **Use encryption** for the security level. Click the **Configure Encryption Keys** button to configure the key as configured on the Altitude 300 (Section 8.2). Note that 128-bit encryption is used for high security.



Encryption Keys Configuration

 Key Size selection applies to all keys. Please enter 13 ASCII characters or 26 hexadecimal digits. If the key is shorter than the required length, 0's will be added to the end of the key.

Encryption Keys Setting

Key Size: Key Format:

Key 1:

Key 2:

Key 3:

Key 4:

Figure 5: Configure WEP Keys

Click **OK** and the window will be closed. Click **Save** from the following screen to save the profile.

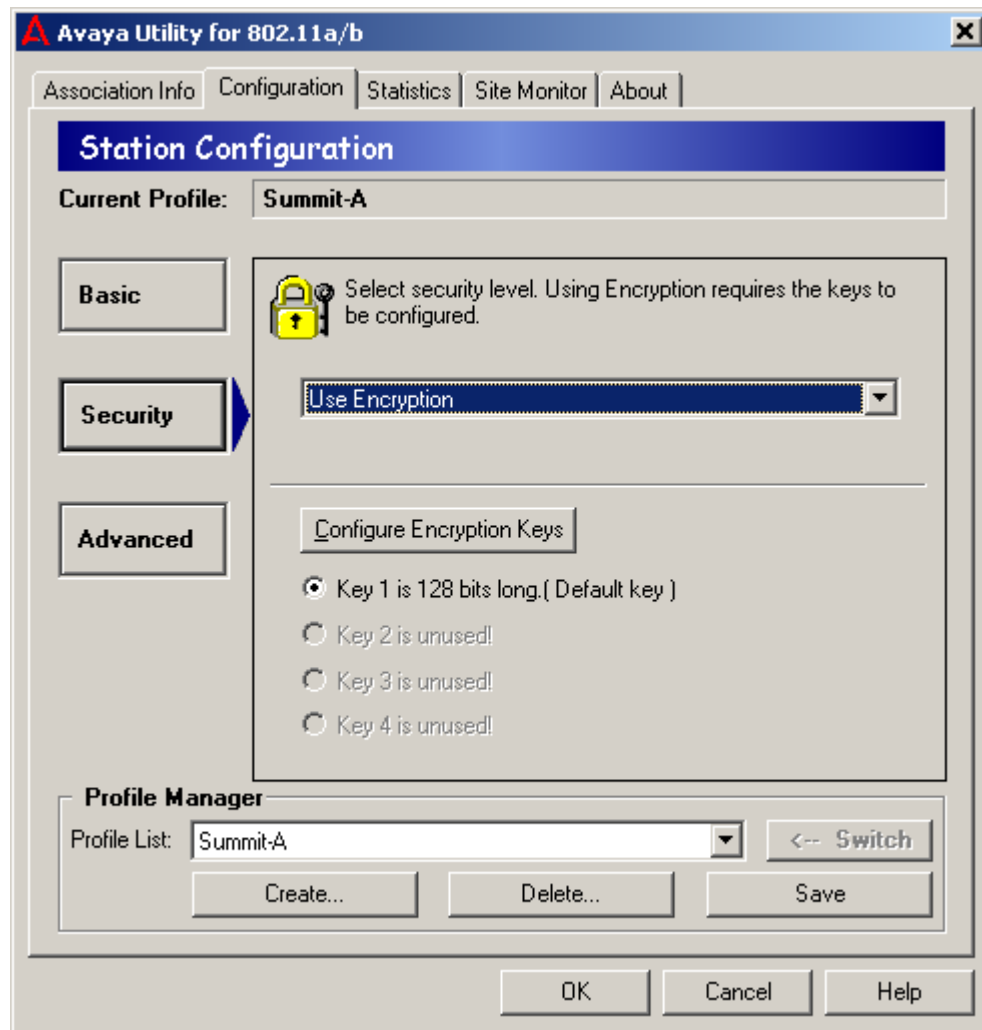


Figure 6: Save Profile Configuration

Press **Association Info** tab in **Figure 6** to verify that the 802.11a/b card has been associated with the Altitude 300. As shown in **Figure 7**, the wireless card is associated with **Network Name** Summit_A and the WEP is used for encryption. Under normal operation, the laptop will get its IP address and the other IP parameters from the DHCP server. Run **ipconfig** on the laptop to verify that the laptop has received the IP address and default gateway from the DHCP server. Ping the default gateway (192.16.2.1) from the laptop to verify the wireless network connectivity.

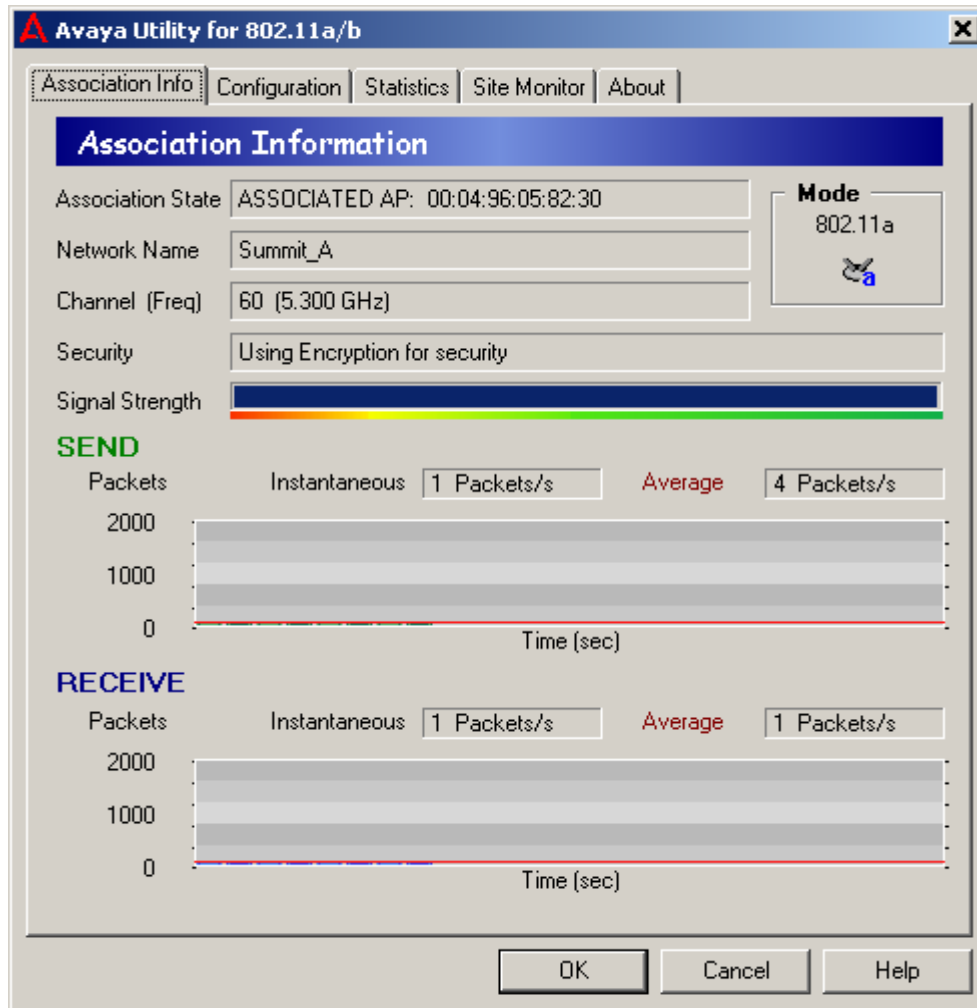


Figure 7: Association Information

If the ping to the Avaya S8300 Media Server (192.168.3.5) is successful, launch the Avaya IP Softphone application from **Start -> Avaya IP Softphone**. Verify that the Avaya IP Softphone can register to the Avaya S8300 Media Server successfully.

6. Configuring Extreme Networks Summit48si

In **Figure 1**, the Summit48si is configured as a Layer 3 router while the Summit 300-48 is configured as a Layer 2 switch. The following four VLANs are configured on the Summit48si:

VLAN ID	Network	Notes
1	192.168.1.0/24	Wireless Management VLAN for the Altitude 300
2	192.168.2.0/24	PCs and wireless clients
3	192.168.3.0/24	Avaya S8300 Media Server and G700 Media Gateway
4	192.168.4.0/24	Avaya IP telephones

Table 3: VLAN Configuration on the Extreme Networks Summit48si

The following screen configures four VLANs on the Summit48si. **Default** VLAN ID 1 is used as the wireless management VLAN on the Altitude 300. IP forwarding must be enabled on these VLANs.

```
#Create VLANs
create vlan "vlan2"
create vlan "vlan3"
create vlan "vlan4"

#Tag VLANs
configure vlan "Default" tag 1
configure vlan "vlan2" tag 2
configure vlan "vlan3" tag 3
configure vlan "vlan4" tag 4

#Enable IP forwarding
enable ipforwarding vlan "Default"
enable ipforwarding vlan "vlan2"
enable ipforwarding vlan "vlan3"
enable ipforwarding vlan "vlan4"

# Configure IP addresses
configure vlan "Default" ipaddress 192.168.1.1 255.255.255.0
configure vlan "vlan2" ipaddress 192.168.2.1 255.255.255.0
configure vlan "vlan3" ipaddress 192.168.3.1 255.255.255.0
configure vlan "vlan4" ipaddress 192.168.4.1 255.255.255.0

#Add tagged VLAN3 for port 17 (to G700 Media Gateway)
configure vlan "vlan3" add port 17 tagged

#Add the VLANs for port 50 (to the Summit 300-48)
configure vlan "Default" add port 50 untagged
configure vlan "vlan2" add port 50 tagged
configure vlan "vlan4" add port 50 tagged

configure vlan "vlan2" add port 18 untagged #To the DHCP/TFTP Server
configure vlan "vlan2" add port 19 untagged #to the IP Softphone
```

A DHCP server was physically connected to the Extreme Networks Summit48si. The same server was also used as a TFTP server. The IP address of the DHCP / TFTP server is 192.168.2.10 (VLAN 2). Use the following command to enable and configure the DHCP Relay.

```
enable bootprelay
configure bootprelay add 192.168.2.10
```

7. Configuring Extreme Networks Summit 300-48

7.1. VLAN and Port Configuration

In **Figure 1**, The Summit 300-48 is configured as a Layer 2 switch. Note that it is not necessary to enable BOOTP relay and IP forwarding for the VLANs. The following commands configure three VLANs on the Summit 300-48:

```

#Create VLANs
create vlan "vlan2"
create vlan "vlan4"

#Tag VLANs
configure vlan "Default" tag 1
configure vlan "vlan2" tag 2
configure vlan "vlan4" tag 4

#Add the VLANs for port 49(to the Summit48si)
configure vlan "Default" add port 1:49 untagged #to the Summit48si
configure vlan "vlan2" add port 1:49 tagged
configure vlan "vlan4" add port 1:49 tagged

#Add untagged VLAN2 for port 1:13 for PC
configure vlan "vlan2" add port 1:13 untagged

#Add tagged VLAN4 for port 1:13 for the IP telephone
configure vlan "vlan4" add port 1:13 tagged

#Configure an IP address and a default route for management
config vlan "Default" ipaddress 192.168.1.2 255.255.255.0
config iproute add default 192.168.1.1 1

```

Port 1:13 on the Summit 300-48 is used to connect to the IP telephone and the PC attached to the IP Telephone. The port is configured with a tagged VLAN 4 and untagged VLAN 2. The tagged VLAN is used for the IP Telephone, and the untagged VLAN is for the PC.

7.2. Configuring the Extreme Networks Summit 300-48 for the Extreme Networks Altitude 300

Port 1:5 on the Summit 300-48 is connected to the Altitude 300 wireless access point. When an Altitude 300 is initially connected, the BootROM is automatically updated. The Altitude 300 receives its configuration from the Summit 300-48 when connected. The wireless configuration on the Summit 300-48 is configured on the physical port connected to the Summit 300-48 (port 1:5 in the sample configuration).

By default, the wireless management VLAN is on the default VLAN. The management IP address of an Altitude 300 must be configured on the management VLAN. A wireless default gateway is used by the Altitude 300 to communicate with IP hosts not on the local management VLAN. The following screen shows that the wireless management VLAN is configured to the Default VLAN with default gateway 192.168.1.1 (on the Summit48si). The Altitude 300 (connected to port 1:5) is configured with the management IP address 192.168.1.5.

```

config wireless Country-code USA
config wireless management-vlan Default
config wireless default-gateway 192.168.1.1
configure wireless ports 1:5 ipaddress 192.168.1.5

```

Use the command **show wireless ports** to verify the wireless status of the Altitude 300. The following screen shows that the Altitude 300 is **online**.

```
Summit300-48:61 # show wireless ports 1:5 detail

Wireless Port:      1:5
State:              Online
Last State Change:  Wed Jan 14 08:53:10 2004
System Up Time:     1 days, 6 hours, 41 minutes, 10 seconds
Manufacturer Name:  Extreme Networks
Product Name:       Altitude 300-2i
Hardware Version:   01000001
Serial Number:      03208-00036
Part Number:        800109
Part Revision:      01
MAC Address:        00:04:96:05:82:30
IP:                 192.168.1.5
Netmask:            255.255.255.0
Gateway:            192.168.1.1
Country Code:       USA
Location:           Unknown Location
Wireless Bridging:  on
Health Check:       enabled
Number of Interfaces: 2
Src IP in logs:     192.168.1.5
```

The Altitude 300 can be configured to use WEP authentication for high wireless security. As shown in the following screen, a security profile named **secure-wep** is created and configured with a WEP VLAN 2, encryption length 128, and key 0 “1234567890123”. This security file is applied to interfaces 1 and 2 on port 1:5. Interfaces 1 and 2 correspond to the 802.11a and 802.11b/g wireless cards on the Altitude 300.

```
#Create and configure security profile
create security-profile secure-wep
configure security-profile secure-wep wep authentication on vlan vlan2
configure security-profile secure-wep encryption-length 128
configure security-profile secure-wep wep key add 0 plaintext 1234567890123
configure security-profile secure-wep wep default-key-index 0

#Apply the security profile to port 1:5 (interfaces 1 and 2)
configure wireless port 1:5 interface 1 security-profile secure-wep
configure wireless port 1:5 interface 2 security-profile secure-wep
```

In order to support the management VLAN and WEP VLAN on port 1:5, port 1:5 is configured with untagged management VLAN Default and tagged WEP VLAN 2 as follows:

```
configure vlan "Default" add port 1:5 untagged
configure vlan "vlan2" add port 1:5 tagged
```

By default, the 802.11a interface is configured to use the RF profile **DEFAULT_A**. The command **configure rf-profile DEFAULT_A ess-name** can be used to change ESS name (or

Network Name). The command **show rf-profile** can be used to verify the rf-profile configuration. By configuring the wireless client with a Network Name, the wireless client can communicate with the correct wireless access point.

```
Summit300-48:99 # config rf-profile DEFAULT_A ess-name Summit_A

* Summit300-48:101 # show rf-profile DEFAULT_A
    Profile Name:      DEFAULT_A
    Mode:              A
    ESS Name:          Summit_A
    Beacon Interval:   40
    DTIM:              2
    Fragmentation Length: 2345
    RTS Threshold:     2330
    Preamble:          Short
    Max Clients:        64
    Short Retry:        4
    Long Retry:         7
    Interfaces:         48
...

```

The following screen shows how to verify the wireless interface configuration:

```
Summit300-48:66 # show wireless ports 1:5 interface 1 config
Port  Intf State RF Prof.      Sec. Prof.      TxRate      Power      Chan.
-----
  1:5   1  EN   DEFAULT_A    secure-wep      54          FULL       0

EN- Enabled, DIS - Disabled

Summit300-48:67 # show wireless ports 1:5 interface 2 config
Port  Intf State RF Prof.      Sec. Prof.      TxRate      Power      Chan.
-----
  1:5   2  EN   DEFAULT_G    secure-wep      54          FULL       0

EN- Enabled, DIS - Disabled

```

Use the command **show wireless ports 1:5 interface 1 clients** to list all the wireless clients associated with the interface 1 (802.11a interface). The following screen shows that the wireless client with the MAC 00:20:A6:47:AA:A3 is associated with the interface by WEB encryption and the wireless state is **forward**.

```
Summit300-48:70 # show wireless ports 1:5 interface 1 clients

Wireless Client Statistics
MAC ADDR      Port  STATE  ENC  AUTH  TIME  RSS
=====
00:20:A6:47:AA:A3  1:5:1 FORWARD  WEP  WEP  25:10:12  220
=====

U->page up D->page down ENTER->refresh ESC->exit

```

7.3. Configuring PoE for the Avaya IP telephones and the Extreme Networks Altitude 300

The Extreme Networks Summit 300-48 is an IEEE 802.3af compliant PoE switch. With PoE, a single Ethernet cable can provide power and the data connection to certain types of powered devices (PDs), including the Avaya IP telephones, the Altitude 300, etc.

The Summit 300-48 supports a lot of PoE features including the power distribution at the system and port level. Refer to the documents in Section 13.1 for detailed configuration for these features. The following only shows the basic configuration for PoE.

By default, all the ports are enabled with PoE on the Summit 300-48. For the Summit 300-48 being tested, it can provide 210 watts power. Use the command **show inline-power** to display the inline-power system information:

```
Summit300-48:39 # show inline-power

                Inline-Power System Information
System maximum internal inline-power: 300 watts
System inline-power admin state: enabled
Power Usage Threshold: 70% (210 watts)
Disconnect-precedence deny-port
Inline-power SNMP traps enabled
```

Port 1:5 on the Summit 300-48 is connected to the Altitude 300. Use the command **show inline-power info detail ports 1:5** to display the detailed PoE information. As shown in the following screen, the Altitude 300 is detected as a class0 device (the class0 PD is the default class with a maximum power consumption of 15.400W) with the real power consumption of 7.70 W.

```
Summit300-48:47 # show inline-power info detail ports 1:5

Port - 1:5

Configured Admin State: Enabled
  Inline-Power State: delivering
  MIB Detect Status: delivering
  Label:
  Violation Precedence: max-class-operator
    Operator Limit: 15400 mW
    Detection: auto
    Reserved Power: 0 mW
    Connect Order: 1
    PD Class: class0
    Max Class Power: 15.400 W
    Measured Power: 7.70 W
    Allowed Power: 15.400 W
    Line Voltage: 50.7 Volts
  Discovered Resistance: 24.8 Kohms
  Discovered Capacitance: 0 uF
    Current: 100 mA
  Fault Status: None (D 0)
```

Port 1:13 on the Summit 300-48 is connected to the Avaya 4620 IP telephone. As shown in the following screen, the Avaya 4620 IP telephone is detected as a class3 device (the class3 PD can consume 15.400W maximum power) with the real power consumption of 6.90 W.

```
Summit300-48:48 # show inline-power info detail ports 1:13
```

```
Port - 1:13
```

```
Configured Admin State: Enabled
  Inline-Power State: delivering
    MIB Detect Status: delivering
      Label:
    Violation Precedence: max-class-operator
      Operator Limit: 15400 mW
        Detection: auto
      Reserved Power: 0 mW
        Connect Order: 2
          PD Class: class3
        Max Class Power: 15.400 W
        Measured Power: 6.90 W
        Allowed Power: 15.400 W
      Line Voltage: 50.7 Volts
    Discovered Resistance: 24.4 Kohms
    Discovered Capacitance: 0 uF
      Current: 114 mA
    Fault Status: None (D 0)
```

8. Interoperability Compliance Testing

This Interoperability Compliance Test included wireless connectivity testing between the Avaya 802.11a/b wireless client and the Extreme Networks Altitude 300 access point, PoE testing between the Summit 300-48 and the Avaya IP telephones, and VoIP testing using the IP Softphone (installed on the laptop with the Avaya 802.11a/b card), the IP telephone and the digital phone as shown in **Figure 1**.

8.1. General Test Approach

Wireless Connectivity test cases were performed manually with and without WEP. VoIP test cases including a 4-party conference call were tested with the Avaya IP Softphone, digital phone, and IP telephone by using different Codecs (G.711 or G.729).

8.2. Test Results

All the related test cases passed successfully. No errors were detected. Avaya 802.11a/b card works well with Extreme Networks Altitude 300 access point in either 802.11a or 802.11b mode with and without WEP encryption. High quality VoIP calls can be made successfully among Avaya IP Softphones (wireless client with Avaya 802.11a/b card), IP telephones, and digital phones.

9. Verification Steps

The following are verification steps for these Applications Notes:

- Verify that the Avaya G700 Media Gateway becomes registered with the Avaya S8300 Media Server (use the **display media-gateway** on the Avaya S8300 Media Server and the command **show mgc** on the Avaya G700 Media Gateway).
- Verify that the Summit 300-48 can power up the IP telephone. Verify that the IP telephone can get its configuration from the DHCP/TFTP server, and register with the Avaya S8300 Media Server.
- Verify that an IP telephone and the PC attached to the telephone are on the different VLANs through the DHCP server configuration.
- Verify that the laptop with the 802.11a/b card can communicate with the Altitude 300 access point using WEP. Verify that the laptop can get its IP parameters from the DHCP server, and register with the Avaya S8300 Media Server.
- Verify that the VoIP calls with high quality can be made among the Avaya IP Softphone, the IP telephone and the digital phone.

10. Support

The customer should call the Extreme Networks Worldwide TAC at 1-800-998-2408 for problems related to the Extreme Networks switches. Technical support is also available at Extreme Networks web site at <http://www.extremenetworks.com/services/wwtac/>.

Product documentation for Extreme Networks can be downloaded via the web at <http://www.extremenetworks.com/services/documentation/>.

11. Conclusion

Extreme Networks Summit 300-48 was compliance tested with the Avaya IP telephones for PoE. Extremes Network Altitude 300 wireless access point was compliance-tested with Avaya 802.11a/b wireless card for Avaya IP Softphones. All VoIP feature functionality test cases completed successfully.

12. Additional References

12.1. Documentation

Avaya documentation can be found in the following URL:

<http://support.avaya.com/japple/css/japple?PAGE=avaya.css.TechnicalDatabase:>

- [1] Administration for Network Connectivity for Avaya Communication Manager, Release 2.0, Issue 7, December 2003; Document Number 555-233-504
- [2] Administrator's Guide for Avaya Communication Manager, Release 2.0, Issue 7, December 2003; Document Number 555-233-506

12.2. Glossary

Technical Term	Definition as it pertains to this document
LAN	Local Area Network
MGP	Media Gateway Processor
WEP	Wired Equivalent Privacy (algorithm)
PoE	Power over Ethernet
VoIP	Voice over IP

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