



Avaya Solution & Interoperability Test Lab

Application Notes for Spectralink 84-Series Wireless Telephones and Avaya Aura® Communication Manager and Avaya Aura® Session Manager – Issue 1.0

Abstract

These Application Notes describe the procedures for configuring Spectralink 84-Series Wireless SIP Telephones which were compliance tested with Avaya Aura® Communication Manager and Avaya Aura® Session Manager.

The overall objective of the interoperability compliance testing is to verify Spectralink 84-Series Telephones functionalities in an environment comprised of Avaya Aura® Communication Manager, Avaya Aura® Session Manager, various Avaya H.323, SIP IP Telephones, and digital telephones.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the procedures for configuring Spectralink 84-Series Wireless Telephones which were compliance tested with Avaya Aura® Communication Manager and Avaya Aura® Session Manager using the SIP protocol.

Spectralink 84-Series Wireless Telephones (herein referred to as Spectralink 84-Series) improve productivity and responsiveness for on-site mobile professionals across a wide range of industries, including healthcare, retail, manufacturing and hospitality. Built on open standards, Spectralink 84-Series transforms the delivery of mobile enterprise applications by bringing the power of thin client and browser technology to front-line professionals in an easy-to-use and easy-to-manage interface. Additionally, Spectralink 84-Series supports a broad range of enterprise-grade PBXs, and wireless LANs, to deliver maximum interoperability with low total cost of ownership.

These Application Notes assume that Communication Manager and Session Manager are already installed and basic configuration steps have been performed. Only steps relevant to this compliance test will be described in this document. For further details on configuration steps not covered in this document, consult references [1] and [2].

2. General Test Approach and Test Results

The general test approach was to place calls to and from Spectralink 84-Series and exercise basic telephone operations. The main objectives were to verify the following:

- Registration
- Codecs (G.711MU)
- Inbound calls
- Outbound calls
- Hold/Resume
- Call termination (origination/destination)
- Transfer with Shuffling enabled (origination/destination/ attended/unattended)
- Transfer with Shuffling disabled (origination/destination/ attended/unattended)
- Three party conference (origination/destination)
- Avaya Feature Name Extension (FNE)
 - Call Park
 - Call Pickup
 - Call Forward (Unconditional, Busy/no answer)
- MWI
- Voicemail
- Serviceability

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance

Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The interoperability compliance test included features and serviceability. The focus of the interoperability compliance testing was primarily on verifying call establishment on Spectralink 84-Series. Spectralink 84-Series operations such as inbound calls, outbound calls, hold/resume, transfer, conference, Feature Name Extension (FNE), and Spectralink 84-Series interactions with Session Manager, Communication Manager, and Avaya SIP, H.323, and digital telephones were verified. The serviceability testing introduced failure scenarios to see if Spectralink 84-Series can recover from failures.

2.2. Test Results

The test objectives were verified. For serviceability testing, Spectralink 84-Series operated properly after recovering from failures such as cable disconnects, and resets of Spectralink 84-Series and Session Manager. Spectralink 84-Series successfully negotiated the codec that was used. The features tested worked as expected.

2.3. Support

Technical support on Spectralink 84-Series can be obtained through the following:

- **Phone:** +1 (800) 775-5330
- **Web:** <http://support.spectralink.com>

3. Reference Configuration

Figure 1 illustrates a sample configuration consisting of an Avaya S8300D Server, an Avaya G450 Media Gateway, a Session Manager server, and Spectralink 84-Series. The solution described herein is also extensible to other Avaya Servers and Media Gateways. Avaya S8720 Servers with an Avaya G650 Media Gateway were included in the test to provide an inter-switch scenario. For completeness, an Avaya 4600 Series H.323 IP Telephone, Avaya 9600 Series SIP IP Telephones, Avaya 9600 Series H.323 IP Telephones, and Avaya 6400 Series Digital Telephones, are included in **Figure 1** to demonstrate calls between the SIP-based Spectralink 84-Series and Avaya SIP, H.323, and digital telephones.

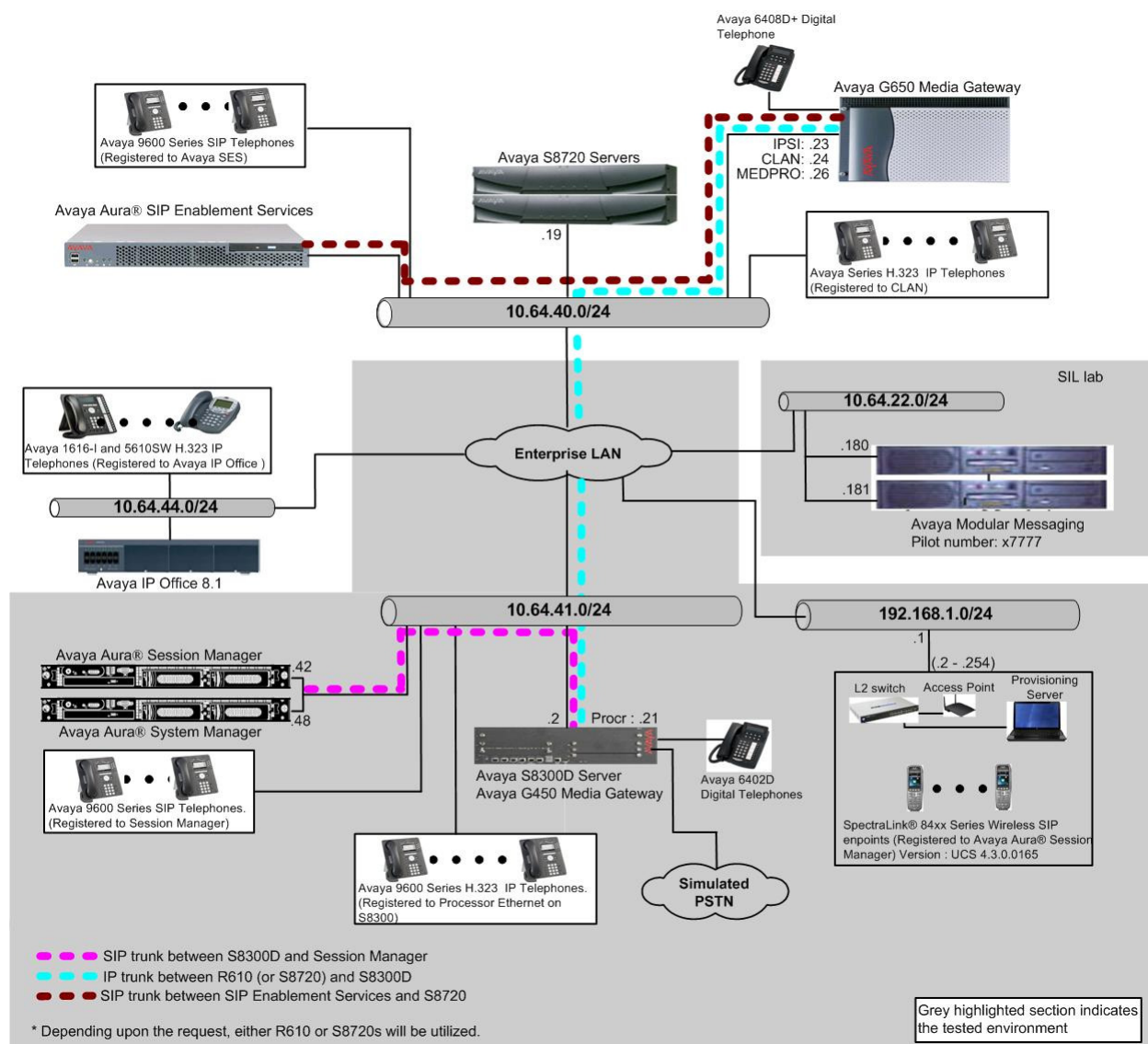


Figure 1: Test Configuration of Spectralink 84-Series Wireless Solution

4. Equipment and Software Validated

The following equipment and software were used for the test configuration.

Equipment		Software/Firmware
Avaya S8300D Media Server with Avaya G450 Media Gateway		Avaya Aura® Communication Manager 6.3 (03.0.124.0-20553)
Avaya Aura® System Manager		6.3.2.4.1529
Avaya Aura® Session Manager		6.3.2.0.632023
Avaya S8720 Servers		Avaya Aura® Communication Manager 5.2.1 (R015x.02.1.016.4)
Avaya G650 Media Gateway		-
	TN2312BP IP Server Interface	HW11 FW044
	TN799DP C-LAN Interface	HW01 FW028
	TN2302AP IP Media Processor	HW20 FW118
Avaya 9600 Series SIP Telephones		
	9620 (SIP)	2.6.4
	9630 (SIP)	2.6.4
	9650 (SIP)	2.6.4
Avaya 9600 Series H.323 Telephones		
	9620 (H.323)	3.1
	9630 (H.323)	3.1
	9650 (H.323)	3.1
Avaya 6408D+ Digital Telephone		-
Spectralink 84-Series		UCS 4.3.0.0165

5. Configure Avaya Aura® Communication Manager

No special configuration is needed for adding SIP wireless endpoints in Communication Manager. Configuring SIP trunks between Communication Manager and Session Manager is not covered in these Application Notes. Please refer [4] as referenced in **Section 10**.

6. Configure Avaya Aura® Session Manager

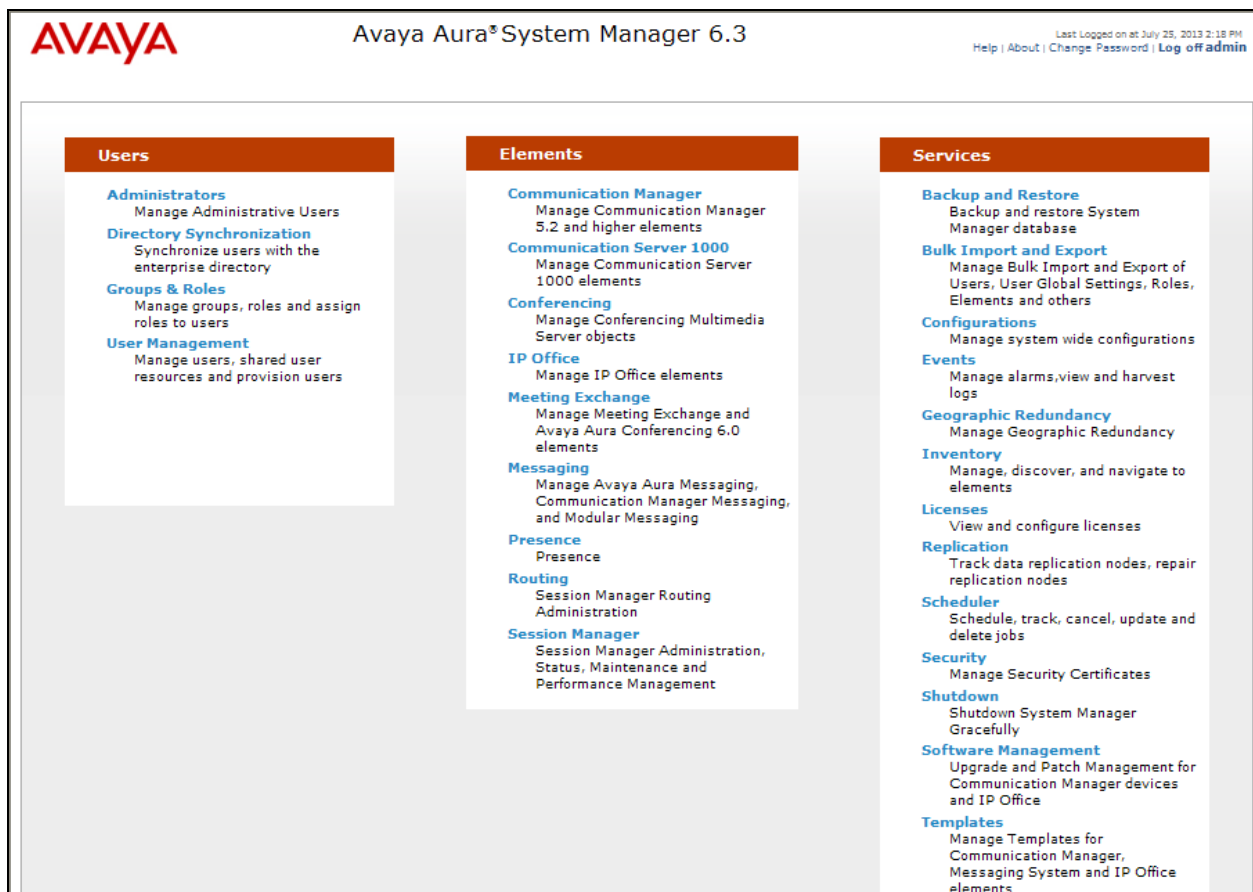
This section provides the procedures for configuring Session Manager as provisioned in the reference configuration. Session Manager is comprised of two functional components: the Session Manager server and the System Manager server. All SIP call provisioning for Session Manager is performed through the System Manager Web interface and is then downloaded into Session Manager.

The following sections assume that Session Manager and System Manager have been installed and that network connectivity exists between the two platforms.

Thus, only the User Management is discussed in this section.

6.1. Configure SIP Domain

Launch a web browser, enter <http://<IP address of System Manager>> in the URL, and log in with the appropriate credentials.



All users were created prior to the compliance test. However, the steps to configure a user are included. To add new SIP users, Navigate to **Home → Users → User Management → Manage Users**. Click **New** (not shown) and provide the following information:

- Identity section
 - **Last Name** – Enter last name of user.
 - **First Name** – Enter first name of user.
 - **Login Name** – Enter extension number@sip domain name. The domain name is defined in Communication Manager.
 - **Authentication Type** – Verify **Basic** is selected.
 - Enter **Localized Display Name**
 - Enter **Endpoint Display Name**
 - Select **English** as **Language Preference**
 - Set the appropriate **Time Zone**.

AVAYA Avaya Aura® System Manager 6.3

Last Logged on at July 25, 2013 2:18 PM
[Help](#) | [About](#) | [Change Password](#) | [Log off admin](#)

[User Management](#) * [Routing](#) * [Home](#)

[Home / Users / User Management / Manage Users](#)

New User Profile [Commit & Continue](#) [Commit](#) [Cancel](#)

Identity * **Communication Profile** * **Membership** **Contacts**

Identity ▾

* **Last Name:** 72043

* **First Name:** 72043

Middle Name:

Description:

* **Login Name:** 72043@avaya.com

* **Authentication Type:** Basic

Password:

Confirm Password:

Localized Display Name: SpectraLink-1

Endpoint Display Name: SpectraLink-1

Title:

Language Preference: English (United States)

Time Zone: (-6:0)Mountain Time (US & C...)

Employee ID:

Department:

Company:

- Communication Profile section

Provide the following information:

- **Communication Profile Password** – Enter a numeric value used for SIP telephone to register with Session Manager.
- **Confirm Password** – Repeat numeric password

Verify there is a default entry identified as the **Primary** profile for the new SIP user. If an entry does not exist, select **New** and enter values for the following required attributes:

- **Name** – Enter **Primary**.
- **Default** – Enter ☒

AVAYA Avaya Aura® System Manager 6.3 Last Logged on at July 25, 2013 2:18 PM
Help | About | Change Password | Log off admin

Home / Users / User Management / Manage Users

New User Profile Commit & Continue Commit Cancel

Identity * **Communication Profile *** Membership Contacts

Communication Profile ▾

Communication Profile Password: ●●●●●●

Confirm Password: ●●●●●●

New Delete Done Cancel

Name
Primary

Select : None

* Name: Primary

Default : ☒

- Communication Address sub-section

Select **New** to define a **Communication Address** for the new SIP user, and provide the following information.

- **Type** – Select **Avaya SIP** using drop-down menu.
- **Fully Qualified Address** – Enter same extension number and domain used for Login Name, created previously.

Click the **Add** button to save the Communication Address for the new SIP user.

The screenshot shows a web interface for managing Communication Addresses. At the top, there is a section header "Communication Address" with a dropdown arrow. Below this, there are three buttons: "New", "Edit", and "Delete". Underneath these buttons is a table with three columns: "Type", "Handle", and "Domain". The table currently displays "No Records found". Below the table, there is a "Type:" label followed by a dropdown menu showing "Avaya SIP". Below this, there is a red asterisk followed by the text "Fully Qualified Address:". This is followed by two input fields: the first contains "72043" and the second contains "avaya.com", separated by an "@" symbol. At the bottom right, there are two buttons: "Add" and "Cancel". The "Add" button is highlighted with a red rectangle.

- Session Manager Profile section
 - **Primary Session Manager** – Select one of the Session Managers.
 - **Secondary Session Manager** – Select **(None)** from drop-down menu.
 - **Origination Application Sequence** – Select Application Sequence defined (not shown) for Communication Manager.
 - **Termination Application Sequence** – Select Application Sequence defined (not shown) for Communication Manager.
 - **Survivability Server** – Select **(None)** from drop-down menu.
 - **Home Location** – Select Location previously configured on Session Manager.

☒ **Session Manager Profile** ▼

SIP Registration

* **Primary Session Manager** SM-D4H26 ▼

Primary	Secondary	Maximum
14	0	14

Secondary Session Manager (None) ▼

Survivability Server (None) ▼

Max. Simultaneous Devices 1 ▼

Block New Registration When Maximum Registrations Active? ☐

Application Sequences

Origination Sequence AppSeq-S8300D ▼

Termination Sequence AppSeq-S8300D ▼

Call Routing Settings

* **Home Location** 41-subnet ▼

Conference Factory Set (None) ▼

- Endpoint Profile section
 - **System** – Select Managed Element defined in **System Manager** (not shown) for Communication Manager.
 - **Profile Type** – Select **Endpoint**.
 - **Use Existing Endpoints** - Leave unchecked to automatically create a new endpoint on Communication Manager when the new user is created or check the box if endpoint is already defined in Communication Manager.
 - **Extension** - Enter same extension number used in this section.
 - **Template** – Select template for type of SIP phone. During the compliance test, **DEFAULT_9630SIP_CM_6_3** was selected.
 - **Security Code** – Enter numeric value used to logon to SIP telephone. (**Note:** this field must match the value entered for the Shared Communication Profile Password field.)
 - **Port** – Select **IP**
 - **Voice Mail Number** – Enter **Pilot Number** for Avaya Modular Messaging if installed or leave field blank. This feature was not used during the compliance test.
 - **Delete Station on Unassign of Endpoint from User or on Delete User** – Check the box to automatically delete station when Endpoint Profile is un-assigned from user.

The screenshot shows the 'CM Endpoint Profile' configuration form. The following fields and sections are highlighted with red boxes:

- * System:** A dropdown menu showing 'Element-S8300D'.
- * Profile Type:** A dropdown menu showing 'Endpoint'.
- Use Existing Endpoints:** A checkbox that is currently unchecked.
- * Extension:** A text input field containing '72043' with a magnifying glass icon and an 'Endpoint Editor' button.
- * Template:** A dropdown menu showing '9630SIP_DEFAULT_CM_6_3'.
- Set Type:** A text input field containing '9630SIP'.
- Security Code:** A text input field containing seven dots.
- Port:** A dropdown menu showing 'IP'.
- Voice Mail Number:** An empty text input field.
- Preferred Handle:** A dropdown menu showing '(None)'.
- Enhanced Callr-Info display for 1-line phones:** An unchecked checkbox.
- Delete Endpoint on Unassign of Endpoint from User or on Delete User:** A checked checkbox.
- Override Endpoint Name:** A checked checkbox.

Click **Commit** (not shown) to save definition of new user. The following screen shows the created users during the compliance test.

AVAYA Avaya Aura® System Manager 6.3

Last Logged on at July 25, 2013 2:18 PM
[Help](#) | [About](#) | [Change Password](#) | [Log off admin](#)

[User Management](#) * [Routing](#) * [Home](#)

User Management

[Manage Users](#)
[Public Contacts](#)
[Shared Addresses](#)
[System Presence ACLs](#)

Home / Users / User Management / Manage Users [Help ?](#)

User Management

[View](#) [Edit](#) [New](#) [Duplicate](#) [Delete](#) [More Actions](#) [Advanced Search](#)

14 Items Refresh Show ALL Filter: Enable

	Last Name	First Name	Display Name	Login Name	SIP Handle	Last Login
<input type="checkbox"/>	admin	admin	Default Administrator	admin		July 25, 2013 2:22:58 PM -06:00
<input type="checkbox"/>	72041	72041	Flare-1	72041@avaya.com	72041	
<input type="checkbox"/>	72042	72042	Flare-2	72042@avaya.com	72042	
<input type="checkbox"/>	72021	72021	SIP-1	72021@avaya.com	72021	
<input type="checkbox"/>	72023	72023	SIP-3	72023@avaya.com	72023	
<input type="checkbox"/>	72027	72027	SIP-7	72027@avaya.com	72027	
<input type="checkbox"/>	72043	72043	SpectraLink-1	72043@avaya.com	72043	
<input type="checkbox"/>	72044	72044	SpectraLink-2	72044@avaya.com	72044	
<input type="checkbox"/>	72045	72045	SpectraLink-3	72045@avaya.com	72045	

Select : All, None

7. Configure Spectralink 84-Series Wireless Telephones

This section provides steps to configure Spectralink 84-Series handsets. The latest firmware was provided by Spectralink. For additional information regarding configuring the Spectralink 84-Series handsets please refer to the latest product documentation available at www.spectralink.com. There are two ways to configure Spectralink 84-Series:

- Using the configuration files [recommended]
- Using the WEB user interface [deprecated]

Using the configuration files

The following files need to be configured, as the phone boots up to register with Session Manager:

- **00907a0e804f.cfg** – The first file that the phone searches while booting up is <MAC>.cfg file. The header, 00907a0e804f, indicates the MAC address of Spectralink 84-Series. In this configuration file, there are sub-configuration files that are listed under CONFIG_FILES field; sip_72043.cfg.

```
<?xml version="1.0" encoding="utf-8" standalone="yes"?>
<!-- Default Master SIP Configuration File-->
<!-- Edit and rename this file to <Ethernet-address>.cfg for each phone.-->
<!-- $Revision: 1.14 $ $Date: 2005/07/27 18:43:30 $ -->
<APPLICATION APP_FILE_PATH="sip.ld" APP_NET_LOAD_FILE_PATH=""
CONFIG_FILES="sip_72043.cfg" MISC_FILES="" LOG_FILE_DIRECTORY=""
OVERRIDES_DIRECTORY="" CONTACTS_DIRECTORY="" />
```

- **sip_72043.cfg** – This is an extension configuration file. This file includes UserID, Password, Fully Qualified Domain Name (FQDN) of the phone, and the IP address of Session Manager.

```
<?xml version="1.0" encoding="utf-8"?>
<PHONE_CONFIG>
  <reg reg.1.address="72043@avaya.com" reg.1.displayName="72043" reg.1.label="72043"
reg.1.auth.userId="72043" reg.1.auth.password="123456"
reg.1.server.1.address="10.64.41.42" reg.1.server.1.port="5060" />
<msg.mwi msg.mwi.1.subscribe="72043@avaya.com" />
</PHONE_CONFIG>
```

Using the WEB user interface

After the Spectralink 84-Series SIP wireless phone gets the IP address, launch a web browser, enter <http://<IP address of wireless phone>> in the URL, and log in with the appropriate credentials.



The screenshot shows a web browser window titled "Configuration Utility" with the address bar displaying "192.168.1.101". The main content area has a black header with the text "Web Configuration Utility". Below this is a large grey rectangle containing a light green box. Inside the green box, the text "Welcome to the Web Configuration Utility" is at the top. Below it is a smaller box titled "Enter Login Information". This box contains the following elements: "Login As" with radio buttons for "Admin" (selected) and "User"; a "Password" label next to a text input field filled with asterisks; and two buttons at the bottom, "Submit" and "Reset".

Select **Simple Setup** from the main menu. Expand SIP Server, and provide the Session Manager IP address and the port that is used to register the phone to Session Manager. Expand SIP Line Identification, and provide appropriate information. Click on **Save**.

Spectralink 8452

Home Simple Setup Preferences Settings Diagnostics Utilities

You are here: Simple Setup

Simple Setup

Language

Phone Language

Web Utility Language

Time Synchronization

SIP Server

Address

Port

SIP Outbound Proxy

Address

Port

SIP Line Identification

Display Name

Address

Authentication User ID

Authentication Password

Label

Base Profile

Note:
* Fields require a phone reboot/restart.

For enabling MWI, navigate to **Settings → Lines → Line 1**. Expand Message Center, and set the configuration as below.
Click on **Save**.

Spectralink 8452

Home Simple Setup Preferences Settings Diagnostics Utilities

You are here: Settings > Lines > Line 1

Line 1

Views

- Line 1
- Line 2
- Line 3
- Line 4
- Line 5
- Line 6

Identification

Authentication

Outbound Proxy

Server 1

Server 2

Call Diversion

Message Center

Subscription Address

Callback Mode

Callback Contact

Ring Type

Note:
* Fields require a phone reboot/restart.

Cancel Reset to Default View Modifications Save

8. Verification Steps

The following steps may be used to verify the configuration:

- Verify that Spectralink 84-Series successfully registers with Session Manager by following the **Session Manager → System Status → User Registrations** link on the System Manager Web Interface.
- Place calls to and from Spectralink 84-Series and verify that the calls are successfully established with two-way talk path.
- While calls are established, enter **status trunk <t/r>** command, where **t** is the SIP trunk group configured, and **r** is trunk group member. This will verify whether the call is shuffled or not. If the call is shuffled, then the **Audio Connection Type** field shows “ip-direct”. Otherwise, the call is not shuffled, by showing “ip-tdm”.

9. Conclusion

Spectralink 84-Series was compliance tested with Communication Manager (Version 6.3) and Session Manager (Version 6.3). Spectralink 84-Series (UCS 4.3.0.0165) functioned properly for feature and serviceability. During compliance testing, Spectralink 84-Series successfully registered with Session Manager, placed and received calls to and from SIP and non-SIP telephones, and executed other telephony features like three-way conference, transfers, hold, etc.

10. Additional References

The following Avaya product documentation can be found at <http://support.avaya.com>

- [1] *Administering Avaya Aura® Communication Manager*, May 2013, Release 6.3, Document Number 03-300509.
- [2] *Administering Avaya® Session Manager*, June 2013, Release 6.3.
- [3] *Administering Avaya® System Manager*, May 2013, Release 6.3.
- [4] *Application Notes for Polycom® Spectralink® 8400 Series Telephones and Avaya Aura® Communication Manager and Avaya Aura® Session Manager* – Issue 1.0

The following document was provided by Spectralink.

- [5] *Spectralink® 84-Series Wireless Handset User Guide*, February 2011, 1725-36720-001 Rev A

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