Spectralink 84-Series Feature Phones

AudioCodes Mediant SBC

Interoperability Guide

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Chapter 1: About This Guide

This guide describes how to configure a Spectralink 84-Series feature phone for connecting to Microsoft Teams using a AudioCodes Mediant SBC.

This guide is intended for qualified technicians and the reader is assumed to have a basic knowledge about the Spectralink 84-Series feature phones, Microsoft Teams and AudioCodes Mediant SBC. It is also assumed, that you have an installed and functioning Microsoft Teams, AudioCodes Mediant SBC and Spectralink 84-Series feature phone.

The guide is divided into two parts:

- AudioCodes Mediant SBC
- Spectralink 84-Series

Each part describes the general configuration and the user administration.

Admin Tip

The configuration steps described are only for a basic configuration to illustrate the important points when performing the integration. More advanced setups with PSTN connectivity, Microsoft Teams hybrid environments etc. are possible, but not described here. For more information, see the Microsoft documentation site for the latest Microsoft documentation.

Setup of the MS Team and basic setup of the AudioCodes Mediant SBC are also not covered. For more information about these tasks, see the relevant Microsoft and AudioCodes documentation.

Related Documentation

All Spectralink documents are available at http://support.spectralink.com/.

Microsoft Teams	Navigate to the Microsoft documentation site for the latest Microsoft documentation.
AudioCodes Mediant SBC	Navigate to the AudioCodes Documentation Portal for the latest AudioCodes Mediant SBC documentation.
Spectralink 84-Series Feature phones	For more information about the feature phone, refer to the 84-Series User Guide available online at http://support.spectralink.com/products.
Spectralink Technical Bulletins	Available online at http://support.spectralink.com/products.
Release Notes	Document that describes software changes, bugfixes, outstanding issues, and hardware compatibility considerations for new software releases. Available online at http://support.spectralink.com/products.
Spectralink Training material	To gain access to the Spectralink training material, you must attend training and become Spectralink Certified Specialist.

Please visit http://partneraccess.spectralink.com/training/classroom-training for more information and registration.

Chapter 2: Introduction

Feature List

The following features are supported:

	Supported features
Telephony	Basic calling Call hold from 8400 Call transfer Blind Call waiting Call forward on No Answer and Always
User experience	Centralized phone book via Active Directory and LDAP
Voice Quality	Codecs: G.711, G.722, G.729
Value added Spectralink features	Rich APIs for third-party solutions integration Instant Messaging / Personal Alarm Real Time Location Services (RTLS) (required third party solution)

Prerequisites

The following must be configured/installed:

- AudioCodes Mediant SBC with the following licenses:
  - TEAMS (for Microsoft Teams only)
  - Far End Users (FEU)
- For Microsoft Teams tenants, a Direct Route has been setup and configured with the AudioCodes Mediant SBC set up as gateway
- LDAP access to an Active Directory hosting the users and credentials for a user with read access.

Limitations

Admin Tip

This setup requires that all users present in the AD have logged in using the MS Team Client and configured simultaneous ringing to their 84-Series feature phone to do proper call routing.

Users not in the AD will have calls routed correctly without any configuration.

Note

With the setup in this guide, it is not possible to assign the same telephone number to both a Microsoft Teams Client and an 84-Series feature phone simultaneously.

For routing purposes, it is recommended, that the telephone numbers assigned to 84-Series feature phone are kept in a separate range.

Integration Sequence

The basic 84-Series feature phone and AudioCodes Mediant SBC integration consists of the following steps:

1. Create a SIP Interface
   For more information, see Creating SIP Interface.
2. Create a Media Realm
   For more information, see Creating a Media Realm.
3. Create an allowed Audio Coders Groups
   For more information, see Creating an allowed Audio Coders Group.
4. Create Message Manipulation
   for more information, see Creating a Message Manipulation.
5. Create an Inbound Manipulation
   for more information see Creating an Inbound Manipulation.
6. Create an IP Profile
   For more information see Creating an IP Profile.
7. Create an IP Group
   For more information, see Creating an IP Group.
8. Create Classifications
   For more information, see Creating Classifications.
9. Create IP-to-IP routing rules
   For more information, see Creating IP-to-IP routing rules.

Admin Tip

As MS Teams requires all phone numbers to be in E.164 format, it is required to transform any other phone number format into E.164.

This guide will keep phone numbers in E.164 format where possible and convert user dialed numbers before processing.

For more information about creating phone numbers in E.164 format, see https://en.wikipedia.org/wiki/E.164

To facilitate that users with both an 84-Series feature phone and a MS Teams Client can receive calls on both endpoints, all MS Teams Clients must be configured for Simultaneous Ringing on the 84-Series feature phone. For more information about Simultaneous Ringing, see MS Teams Client documentation.

Admin Tip

Unfortunately, setting the user's own phone number as the destination of the Simultaneous Ringing will cause MS Teams to not route the call to the 84-Series feature phone. A possible solution is to enter the local number with a fake E.164 prefix and then transform to the correct prefix in the AudioCodes Mediant SBC.

It is recommended to use an unused E.164prefix, e.g. +999.

When a call originates from an 84-Series feature phone, the AudioCodes Mediant SBC will need to know if the call should be routed either:

- To a MS Team Client (and possibly also a 84-Series feature phone via Simultaneous Ringing)
- Directly to an 84-Series feature phone.

Therefore, the AudioCodes Mediant SBC will be configured to do a LDAP look-up in the Active Directory of the user of the destination number to be able to decide where to route the call.

Example Environment

The detailed configuration steps in the next sections assume the following example environment:

- All users are homed the MS Teams environment
- Azure AD Domain Services is configured and has Secure LDAP enabled
- E.164 numbers for Teams are in the +1425100109x range
- E.164 numbers for 84-Series feature phones are in the +457628119x range
- AudioCodes Mediant SBC with IP address 172.29.198.4
- 84-Series feature phones with the IP address 172.29.194.*
- Fake E.164 routing prefix is +999

Chapter 3: AudioCodes Mediant SBC

Below is a description of how to perform a setup from the AudioCodes Mediant SBC user interface of the AudioCodes Mediant SBC following the steps 1-9 to be able to make calls.

Creating SIP Interface

Add an entry to the SIP Interfaces table (**Setup** Menu > **Signaling & Media** tab > **Core Entities** folder > **SIP Interfaces**):

- Name: IP-8400
- Network Interface: LAN_IF
- Application Type: SBC
- UDP Port: 5060
- TCP Port: 0
- TLS Port: 0

Creating a Media Realm

Add an entry to the SIP Interfaces table (**Setup** Menu > **Signaling & Media** tab > **Core Entities** folder > **Media Realms**):

- Name: IP-8400
- IPv4 Interface Name: LAN_IF
- UDP Port Range Start: 6000
- Number Of Media Session Legs: 1000

Creating an allowed Audio Coders Groups

Add an entry to the SIP Interfaces table (**Setup** Menu > **Signaling & Media** tab > **Coders & Profiles** folder > **Media Realms**):

- Name: IP-8400
- Items: G.711A, G.711U, G.729

Creating a Message Manipulation

Add an entry to the Message Manipulations table (**Setup** Menu > **Signaling & Media** tab > **Message Manipulation** folder > **Message Manipulations**):

- Name: Prefix Refer-To
- Manipulation Set ID: Pick an unused set ID

- Message Type: Refer
- Condition: Header.Refer-To.url.User regex 11[8-9]x
- Action Subject: Header.Refer-To.URL.User
- Action Type: Add Prefix
- Action Value: '+457628'

Creating an Inbound Manipulation

Add an entry to the Message Manipulations table (**Setup** Menu > **Signaling & Media** tab > **Manipulation** folder > **Inbound Manipulations**):

- Name: Add E.164 prefix
- Request Type: INVITE
- Source IP Group: IP-8400
- Destination Username Pattern: 11[8-9]x
- Manipulated Item: Destination
- Prefix to Add: +457628

Creating an IP Profile

Add an entry to the Message Manipulations table (**Setup** Menu > **Signaling & Media** tab > **Coders & Profiles** folder > **IP Profiles**):

- Name: IP-8400
- SBC Media Security Mode: Not Secured
- Allowed Audio Coders: Select the Allowed Audio Coders Group created previously
- Remote REFER Mode: Handle Locally
- Remote Replaces Mode: Handle Locally
- Remote 3xx Mode: Handle Locally
- Remote Hold Format: Send Only
- Broken Connection Mode: Ignore

Creating an IP Group

Add an entry to the Message Manipulations table (**Setup** Menu > **Signaling & Media** tab > **Core Entities** folder > **IP Groups**):

- Name: IP-8400
- Topology Location: Down

- Type: User
- IP Profile: IP-8400
- Media Realm: IP-8400
- Classify By Proxy Set: Disabled
- Inbound Message Manipulation Set: The set ID of the Manipulation set created previously

Creating Classifications

Add an entry to the Classification table (**Setup** Menu > **Signaling & Media** tab > **SBC** folder > **Classification**):

- Name: 8400-Series
- Source SIP Interface: IP-8400
- Source IP Address: 172.29.194.*
- Source IP Group: IP-8400

Creating IP-to-IP routing rules

Add an entry to the Message Manipulations table (**Setup** Menu > **Signaling & Media** tab > **Coders & Profiles** folder > **IP-to-IP Routing**):

- Name: Terminate REGISTER
- Source IP Group: IP-8400
- Request Type: REGISTER
- Destination Type: All Users

Add an entry to the Message Manipulations table (**Setup** Menu > **Signaling & Media** tab > **Coders & Profiles** folder > **IP-to-IP Routing**):

- Name: *-> IP-8400
- Destination Username Pattern: +457628119x
- Destination Type: All Users

Chapter 4: Spectralink 84-Series Config Files

Enable the interop features on the 84-Series provisioning server by updating each phone's configuration file(s).

Note

Settings not mentioned below should be left at their default values.

Below is a description of how to perform a setup of the 84-Series config files:

site.cfg

```
reg.1.server.1.address="172.29.198.4"
reg.1.server.1.port="5060"
dialplan.removeEndOfDial="1"
dialplan.digitmap="x.T"
```

[MAC]-ext.cfg

```
reg.1.address="="+4576281197" (e.g. for handset with local no. 1197)
```

*These settings refer to SIP register without digest authentication. For other Spectralink 84-Series features, please refer to the *Spectralink 84-Series Wireless Telephone Administration Guide* available on the Spectralink support site at http://support.spectralink.com/products/wi-fi/spectralink-84-series-wireless-telephone.

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