Configuring MediaPack™ 1288 Analog Gateway as Third-Party SIP Device (Advanced) in Cisco Unified Communications Manager Ver. 10.0.1

Version 7.2
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Document Revision Record

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<tr>
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Documentation Feedback

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1 Introduction

This Configuration Note describes how to set up the AudioCodes MediaPack 1288 Analog Gateway to communicate with the Cisco Unified Communications Manager (CUCM).

1.1 Intended Audience

The document is intended for engineers, or AudioCodes and Cisco Partners who are responsible for installing and configuring Cisco's CUCM and AudioCodes MediaPack 1288 Analog Gateway for enabling VoIP calls.

1.2 About AudioCodes MediaPack 1288 Product

AudioCodes MediaPack 1288 (MP-1288), is a cost-effective best-of-breed, high density analog media voice-over-IP (VoIP) gateway. The device provides superior voice technology for connecting legacy telephones, fax machines and modems with IP-based telephony networks, as well as for integration with IP PBX systems. It is designed and tested to be fully interoperable with leading softswitches, unified communications (UC) servers and SIP proxies.

The device also supports session border controller (SBC) functionality.

The device is designed for carrier environments including 1+1 power supplies and 1+1 Ethernet redundancy, maintaining high voice quality to deliver reliable enterprise VoIP communications. Advanced call routing mechanisms, network voice quality monitoring and survivability capabilities (including PSTN fallback) result in minimum communications downtime.

The device can be deployed for the following applications:

- Enterprise campus deployments
- PSTN emulation for service providers
- Large-scale analog integration with Microsoft Skype for Business environments or other cloud-based or hybrid PBX deployments
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2 Component Information

2.1 AudioCodes MP-1288 Version

Table 2-1: AudioCodes MP-1288 Version

<table>
<thead>
<tr>
<th>SBC Vendor</th>
<th>AudioCodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Models</td>
<td>MediaPack 1288</td>
</tr>
<tr>
<td>Software Version</td>
<td>SIP_7.20A.156.023</td>
</tr>
<tr>
<td>Protocol</td>
<td>SIP/UDP or SIP/TCP</td>
</tr>
<tr>
<td>Additional Notes</td>
<td>None</td>
</tr>
</tbody>
</table>

2.2 Cisco CUCM Version

Table 2-2: Cisco Version

<table>
<thead>
<tr>
<th>Vendor/Service Provider</th>
<th>Cisco</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSW Model/Service</td>
<td>CUCM</td>
</tr>
<tr>
<td>Software Version</td>
<td>10.0.1.11900-2</td>
</tr>
<tr>
<td>Protocol</td>
<td>SIP</td>
</tr>
<tr>
<td>Additional Notes</td>
<td>None</td>
</tr>
</tbody>
</table>
2.3 Interoperability Test Topology

The interoperability testing between AudioCodes MediaPack 1288 Analog Gateway and Cisco CUCM was done using the following topology setup:

- Enterprise Analog PBX (based on AudioCodes MediaPack 1288 Analog Gateway).
- Enterprise wishes to offer its employees enterprise-voice capabilities by connecting the Analog PBX to the Cisco CUCM.

The figure below illustrates this interoperability test topology:

Figure 2-1: Interoperability Test Topology between MP-1288 and Cisco CUCM
2.3.1 Environment Setup

The interoperability test topology includes the following environment setup:

**Table 2-3: Environment Setup**

<table>
<thead>
<tr>
<th>Area</th>
<th>Setup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signaling</td>
<td>Both MP-1288 and Cisco CUCM can operate with SIP-over-UDP or</td>
</tr>
<tr>
<td>Transcoding</td>
<td>SIP-over-TCP transport types</td>
</tr>
<tr>
<td>Codecs</td>
<td>Both MP-1288 and Cisco CUCM support G.711A-law, G.711U-law, and G.729</td>
</tr>
<tr>
<td>Transcoding</td>
<td>coder (other coders can be configured)</td>
</tr>
<tr>
<td>Media</td>
<td>Both MP-1288 and Cisco CUCM operate with RTP media type</td>
</tr>
<tr>
<td>Transcoding</td>
<td></td>
</tr>
</tbody>
</table>

2.3.2 Known Limitations

There were no limitations observed in the interoperability tests done for the AudioCodes MP-1288 interworking with Cisco's CUCM.
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3 Configuring Cisco CUCM Administration

This section describes how to configure the Cisco Unified CM Administration interface.

3.1 Log in to Cisco Unified CM Administration

The procedure below describes how to log in to the Cisco CM Unified Administration interface.

➢ To log in to the Cisco Unified CM Administration interface:

1. Log in to the Cisco Unified CM Administration by entering the IP address of the Cisco Unified Communications Manager (CUCM) in the Web browser address field.

   Figure 3-1: Cisco Unified CM Administration

2. In the 'Username' field, enter the user name.
3. In the 'Password' field, enter the password.
4. Click Login.

3.2 Add an End User

The procedure below describes how to add an end user in the Cisco CM Unified Administration. In this configuration, the end user is the MP-1288 device.

➢ To add an end user:

1. Select User Management > End User, and then click Add New to add a new End User.

   Figure 3-2: Add an End User
The following is a screen capture of a typical end user:

**Figure 3-3: Typical End User Configuration**

2. Enter the unique end user identification name. You can enter any character, including alphanumeric and special characters. The User ID is the username that should be configured on the MP-1288 Authentication page (see Section 4.9 on page 34). In the example above, the User ID '5001' is configured.

3. In the 'Last name' field, enter the last name. You can enter any character, including alphanumeric and special characters.

4. In the 'Digest Credentials' field, enter Digest Credentials. Cisco Unified Communications Manager uses the digest credentials that you specify here to validate the credentials that the phone offers during digest authentication (e.g., Registration). The Digest Credentials is the password that should be configured on the MP-1288 Authentication page (see Section 4.9 on page 34).

5. Click **Save**.

**Note:** Due to the Cisco CUCM limitation (up to 8 DNs can be associated with one phone device), you will need to configure an End User for all of the eight FXS ports on the MP-1288.
3.3 Configure Phone Security Profile for MP-1288

The procedure below describes how to configure the phone security profile for the MP-1288 device which will communicate with the CUCM.

➢ To add a phone security profile for the MP-1288:

1. Open the Cisco Unified Communications Solutions page.
2. Select System > Security > Phone Security Profile; the 'Find and List Phone Security Profiles' screen is displayed:

Figure 3-4: Phone Security Profile-Add New

3. Click Add New; the 'Phone Security Profile Configuration' screen is displayed:

Figure 3-5: Phone Security Profile Configuration-Device Type

4. From the 'Phone Security Profile Type' drop-down list, select Third-party SIP Device (Advanced), and then click Next.
The Phone Security Profile Information pane is displayed:

**Figure 3-6: Phone Security Profile Configuration - Information**

5. In the 'Name' field, enter the name of the Security Profile, i.e., 'MP-1288 Security profile 5060 UDP'.
6. From the 'Transport Type' field, select the appropriate Transport Type, i.e., UDP.
7. Select the **Enable Digest Authentication** check box.
8. In the ‘SIP Phone Port’ field, enter the required port for signaling, i.e., 5060.
9. Click the **Save** button.

**Note:** In order to differentiate phones which are represented by one MP-1288 (due to the Cisco CUCM limitation that up to eight DNs can be associated with one phone device), each phone should be configured with a different signaling port.
3.4 Configure MP-1288 as Third-Party SIP Device (Advanced)

The procedure below describes how to add the MP-1288 as a third-party SIP device on the CUCM.

➢ To add a third-party SIP device (advanced):
1. Open the Cisco Unified Communications Solutions page.
2. Select **Device > Phone**; the ‘Find and List Phones’ screen is displayed:

   **Figure 3-7: Add Third-Party SIP Device**

3. Click the **Add New** button to add a new third-party device; the ‘Add a New Phone’ screen is displayed:

   **Figure 3-8: Add a New Phone**
4. From the 'Phone Type' drop-down list, select **Third-party SIP Device (Advanced)**, and then click **Next**; the 'Phone Configuration' screen is displayed:

Figure 3-9: Phone Configuration (1)

- In the 'MAC Address' field, enter a 12-digit string.
- In the 'Description' field, enter a short description, i.e., MP-1288-Lines 9-16.
- From the 'Device Pool' drop-down list, select **Default**.
- From the 'Phone Button Template' drop-down list, select **Third-party SIP Device (Advanced)**.
9. From the 'Device Security Profile' drop-down list, select **MP-1288 Security Profile 5065 UDP** (the profile is configured in Section 3.3 on page 15).

10. From the 'SIP Profile' drop-down list, select **Standard SIP Profile**.

11. From the 'Digest User' drop-down list, select **5004** (the user is configured in Section 3.2 on page 13).
12. Click **Save**; the device information is displayed:

**Figure 3-11: Apply Config**

13. You can configure up to eight phone line connections between the CUCM and the MP-1288 device.

14. Click **Apply Config**.
3.5 Configure Directory Number

The procedure below describes how to configure the directory numbers (extension numbers) for communicating between the CUCM and the MP-1288 device.

➢ To add new directory numbers to the Phone device:
1. Select the ‘Add a new DN’ link in the Association part of the Phone Configuration:

   **Figure 3-12: Add New Directory Number**

   ![Add New Directory Number](image)

   2. On the Directory Number Configuration page, in the ‘Directory Number’ field, enter the extension number that you wish to configure.

   **Figure 3-13: Configure Directory Numbers**

   ![Configure Directory Numbers](image)

   3. Click Save.

   4. Scroll down to the ‘Users Associated with Line’ pane.
5. Click **Associate End Users** to associate this line with the end user, created in Section 3.2 on page 13.

6. Click **Save**.

7. Click **Apply Config**.

The configuration is displayed in the following screen:

**Figure 3-16: Phone Configuration**
8. Repeat the above steps for each extension number that you wish to configure.

**Notes:**
- You can configure up to eight directory numbers (phone numbers for the endpoints).
- Each phone number extension that you configure in this section should also be configured in the Endpoint Phone Number Table on the MP-1288 (see Section 4.5 on page 31).
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4 Configuring AudioCodes MP-1288

This section provides step-by-step procedures on how to configure the AudioCodes MP-1288 Analog Gateway to communicate with the Cisco CUCM.

4.1 Configure SIP Signaling Interfaces

The procedure below describes how to configure SIP Interfaces. As was mentioned above, due to the Cisco CUCM limitation that up to eight DNs can be associated with one phone device, each phone should be configured with a different signaling port. In the MP-1288 signaling ports are configured in the SIP Interface Table. So, for the interoperability between MP-1288 and Cisco CUCM, the SIP Interface with a different port must be configured for each of the eight analog ports.

➢ To configure SIP Interfaces:

1. Open the SIP Interfaces table (Setup menu > Signaling & Media tab > Core Entities folder > SIP Interfaces).
2. Add a SIP Interface. You can use the default SIP Interface (Index 0), but modify it as shown below:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>0</td>
</tr>
<tr>
<td>Name</td>
<td>SIPInterface_5060</td>
</tr>
<tr>
<td>Network Interface</td>
<td>Voice</td>
</tr>
<tr>
<td>Application Type</td>
<td>GW</td>
</tr>
<tr>
<td>UDP Port</td>
<td>5060</td>
</tr>
<tr>
<td>TCP Port</td>
<td>0</td>
</tr>
<tr>
<td>TLS Port</td>
<td>0</td>
</tr>
</tbody>
</table>

3. Configure a SIP Interface for Port 5065:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>1</td>
</tr>
<tr>
<td>Name</td>
<td>SIPInterface_5065</td>
</tr>
<tr>
<td>Network Interface</td>
<td>WAN_IF</td>
</tr>
<tr>
<td>Application Type</td>
<td>Voice</td>
</tr>
<tr>
<td>Application Type</td>
<td>GW</td>
</tr>
<tr>
<td>UDP Port</td>
<td>5065</td>
</tr>
<tr>
<td>TCP Port</td>
<td>0</td>
</tr>
<tr>
<td>TLS Port</td>
<td>0</td>
</tr>
</tbody>
</table>
4. Repeat the above steps for each of the eight analog ports that you wish to configure. The configured SIP Interfaces are shown in the figure below:

Figure 4-1: Configured SIP Interfaces in SIP Interface Table
4.2 Configure Proxy Sets

The procedure below describes how to configure Proxy Sets. The Proxy Set defines the destination address (IP address or FQDN) of the Cisco CUCM server. The Proxy Sets will be later applying to the VoIP network by assigning them to IP Groups.

➢ To configure Proxy Sets:

1. Open the Proxy Sets table (Setup menu > Signaling & Media tab > Core Entities folder > Proxy Sets).
2. Add a Proxy Set for the Cisco CUCM. You can use the default Proxy Set (Index 0), but modify it as shown below:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>0</td>
</tr>
<tr>
<td>Name</td>
<td>ProxySet_5060</td>
</tr>
<tr>
<td>SBC IPv4 SIP Interface</td>
<td>SIPInterface_5060</td>
</tr>
</tbody>
</table>

Figure 4-2: Configuring Proxy Set for port 5060 toward Cisco CUCM

   a. Select the Index row of the Proxy Set that you added, and then click the Proxy Address link located below the table on the Proxy Sets page; the Proxy Address table opens.
   b. Click New; the following screen appears:
c. Configure the address of the Proxy Set according to the parameters described in the table below.

d. Click **Apply**.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>0</td>
</tr>
<tr>
<td>Proxy Address</td>
<td>10.15.25.11 (Cisco CUCM IP address)</td>
</tr>
<tr>
<td>Transport Type</td>
<td>UDP</td>
</tr>
</tbody>
</table>

3. Repeat the above steps for each signaling port (different port for each 8 analog ports) that you wish to configure.

The configured Proxy Sets are shown in the figure below:

![Figure 4-4: Configured Proxy Sets in Proxy Sets Table](image-url)
4.3 Configure IP Groups

The procedure below describes how to configure IP Groups. The IP Group represents Cisco CUCM. It is associated with a Proxy Set.

➢ To configure IP Groups:

1. Open the IP Groups table (Setup menu > Signaling & Media tab > Core Entities folder > IP Groups).

2. Add an IP Group for port 5060 toward Cisco CUCM. You can use the default IP Group (Index 0), but modify it as shown below:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>0</td>
</tr>
<tr>
<td>Name</td>
<td>IPG_5060</td>
</tr>
<tr>
<td>Type</td>
<td>Server</td>
</tr>
<tr>
<td>Proxy Set</td>
<td>ProxySet_5060</td>
</tr>
</tbody>
</table>

3. Repeat the above steps for each signaling port (different port for each of the eight analog ports) that you wish to configure.

The configured IP Groups are shown in the figure below:

Figure 4-5: Configured IP Groups in IP Group Table
4.4 Configure Proxy Server and Registration

The procedure below describes how to configure the Proxy Server (Cisco CUCM) and registration parameters.

- To configure the Proxy and Registration parameters:
  1. Open the Proxy & Registration page (Setup menu > Signaling & Media tab > SIP Definitions folder > Proxy & Registration).

Figure 4-6: Proxy

2. From the 'Use Proxy IP as Host' drop-down list, select Enable.
3. In the 'Gateway Name' field, enter the CUCM IP address.
4. In the 'Proxy Name' field, enter the CUCM IP address.

Figure 4-7: Registration
5. From the ‘Enable Registration’ drop-down list, select **Enable**.
6. In the ‘Registrar Name’ field, enter the CUCM IP address.
7. Click the **Apply** button.

### 4.5 Configure Endpoint Phone Numbers

The procedure below describes the configuration of the MP-1288 channels, which includes assigning them to Trunk Groups. A Trunk Group is a logical group of physical trunks and channels. A Trunk Group can include multiple trunks and ranges of channels. To enable and activate the channels of the device, Trunk Groups need to be configured and assigned with telephone numbers. Channels that are not configured in this table are disabled.

➢ **To configure a Trunk Group:**

1. Open the Trunk Group table (Setup menu > Signaling & Media tab > Gateway folder > Trunks & Groups > Trunk Groups).

![Figure 4-8: Endpoint Phone Number Table](image)

2. In the ‘Phone Number’ fields, enter the directory numbers that you configured on the Cisco lines (see Section 3.5 on page 21).
3. In the ‘Trunk Group ID’ fields, enter “1” for first eight numbers and increment it for each of the eight Trunk Groups.
4. Click **Apply**.
4.6 Configure Trunk Group Settings

The procedure below describes how to configure the Trunk Group Settings Table. The main configuration includes the following:

- Channel select method, which defines how the device allocates incoming IP-to-Tel calls to the channels of a Trunk Group.
- Registration method for registering Trunk Groups to remote IP servers (Serving IP Group).

➢ To configure Trunk Group settings:

1. Open the Trunk Group Settings table (Setup menu > Signaling & Media tab > Gateway folder > Trunks & Groups > Trunk Group Settings).

   Figure 4-9: Trunk Group Settings

2. Configure the entry as shown in the screen above. For each Trunk Group configure:
   a. ‘Channel Select Mode’ as By Dest Phone Number
   b. ‘Registration Mode’ as Per Endpoint
   c. ‘Serving IP Group’ the IP Group, configured in Section 3.5 on page 29 above

4.7 Configure Tel-to-IP Routing

The procedure below describes how to configure routing rules that are used to route calls from the Tel side to an IP destination (Cisco CUCM).

➢ To configure Tel-to-IP routing:

1. Open the Tel-to-IP Routing table (Setup menu > Signaling & Media tab > Gateway folder > Routing > Tel->IP Routing).
2. Click New.
3. Configure the entry as shown in the screen above (to send all messages from Tel to Cisco CUCM).
4. Click Apply.

4.8 Configure IP-to-Tel Routing

The procedure below describes how to configure routing rules are used to route incoming IP calls from Cisco CUCM to Trunk Groups.

➢ To configure IP-to-Tel routing:
1. Open the IP-to-Tel Routing table (Setup menu > Signaling & Media tab > Gateway folder > Routing > IP->Tel Routing).
2. Click New.

3. Configure the entry as shown in the screen above (this sends all messages from a specific SIP Interface to the appropriate Trunk Group).
4. Click Apply.
4.9  Configure End User Authentication

The procedure below describes how to configure the end user authentication. The Authentication table lets you configure an authentication user name and password per FXS port.

➢ To configure authentication credentials per port:

1. Open the Authentication page (Setup menu > Signaling & Media tab > Gateway folder > Analog Gateway > Authentication).

   Figure 4-12: Authentication Table

2. Configure the user name and password according to the CUCM end user credentials (see Section 3.3 on page 13).

3. Click Apply.
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