

Spectralink IP-DECT Server 200/400/6500 and DECT Server 2500/8000

Interoperability Guide

Cisco Unified Communications Manager (CUCM)

3rd party SIP installation

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Contents

About This Guide	4
Infrastructure Version Information	5
Feature List	7
Spectralink IP-DECT/DECT Server	8
Configuring the Spectralink IP-DECT/DECT Server General Settings SIP Settings Enabling Feature Codes for Use of the Call forward Unconditional Feature	8 8 8 11
Adding Users and Handsets To Add Users to the IP-DECT/DECT Server from the Web Based Admin- istration Page	13 13
Cisco Unified Communications Manager	.16
Setting up Phone Security Profile Adding DECT Handsets to CUCM Database Manual End User/Handset Creation in CUCM Automated End User/Handset Provisioning using the Bulk Administration Tool	16 18 18 24
Example of XML Configuration File	25

About This Guide

This guide describes how to configure a Spectralink IP-DECT Server 200/400/6500 and Spectralink DECT Server 2500/8000 for connecting to a Cisco Unified Communications Manager.

In the following both servers will be referred to as "Spectralink IP-DECT/DECT Server".

The Cisco Unified Communications Manager will be referred to as "CUCM".

This guide is intended for qualified technicians and the reader is assumed to have a basic knowledge about the Spectralink IP-DECT/DECT Server and the Cisco Unified Communications Manager. It is also assumed, that you have an installed and functioning Cisco Unified CM Server and Spectralink IP-DECT/DECT Server.

You can configure the Spectralink IP-DECT/DECT Server solution to be used on a Cisco Unified Communications Manager in two different ways:

• Third Party SIP device - described in this guide

Handsets configured as a Third Party SIP device will have basic integration.

To be able to register Spectralink handsets, phone licenses for 3rd party SIP are required. For more information on License Unit Calculation and download of phone licenses to CUCM, see the Cisco documentation.

 Spectralink IP-DECT – CUCM license and COP file installation (recommended) (not relevant to Spectralink IP-DECT Server 200)

Handsets configured as Spectralink IP-DECT will have a tighter integration with the Cisco Unified Communications Manager, and will have access to additional features.

Having the Cisco Unified CM (Advanced Features) License installed it is also possible to:

- Predefine user data including CUCM device names manually in a user XML file for provisioning.
- Predefine user data including CUCM device names manually in a CSV file in Spectralink IP-DECT Server format to be imported to the Spectralink IP-DECT Server.
- Export user data from the Spectralink IP-DECT Server in a CSV file in CUCM format to be imported directly to the CUCM.

For more information, see the relevant Interoperability Guide.

The guide is divided into two parts:

- Spectralink IP-DECT/DECT Server part
- Cisco Unified Communications Manager part

Each part describes the general configuration and the user administration.

Infrastructure Version Information

- Interoperability testing between the Spectralink IP-DECT/DECT Server and the CUCM was conducted using version 11.0 of the Cisco Unified Communications Manager and firmware PCS16F of the Spectralink IP-DECT Server and PCS16C of the Spectralink DECT Server.
- To support the configuration described in this guide, the Spectralink IP-DECT/DECT Server must have firmware version (200 PCS18B, 400/6500 PCS16F or 2500/8000 PCS16C_) or newer.
- Spectralink DECT Handsets 7522/7532, 7622/7642 and 7722/7742 must have firmware PCS17Ha.
- Spectralink DECT Handset 7502 must have firmware PCS18C.



Note:

The examples in this guide are made with IP-DECT Server firmware PCS16F and Cisco Unified CM version 11.0.

Related Documentation

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

Subject	Documentation
Cisco Unified Communications Man- ager	Navigate to the Cisco documentation site for the latest Cisco documentation.
Spectralink DECT Handsets	For more information about the handset, refer to the user guide available online at <u>http://sup-port.spectralink.com/products</u> .
Site Survey Function in Handset	For more information about the site survey function in handset, refer to the guide available online at <u>http://support.spectralink.com/products</u> .
Synchronization and Deployment	For more information about synchronization and deploy- ment, refer to the guide available online at <u>http://sup- port.spectralink.com/products</u> .
Spectralink IP-DECT/DECT Server	For more information about the server, refer to the guide available online at <u>http://sup-port.spectralink.com/products</u> .
Provisioning	For more information about provisioning, refer to the guide available online at <u>http://sup-port.spectralink.com/products</u> .
Spectralink Technical Bulletins	Available online at <u>http://sup-</u> port.spectralink.com/products.
Release Notes	Document that describes software changes, bug fixes, outstanding issues, and hardware compatibility considerations for new software releases. Available online at http://support.spectralink.com/products .
Spectralink DECT Training material	In order to gain access to the Spectralink training mater- ial, you must attend training and become Spectralink Cer- tified Specialist.
	Please visit <u>http://-</u> partneraccess.spectralink.com/training/classroom-train- ing for more information and registration.

Feature List

The following features are supported:

	Supported features
Telephony	 Basic Calling Call Hold Call Transfer Call Waiting Call Forward Message Waiting Directed Call Park SIP over UDP Call Completed Elsewhere
User experience	SIP URI Support Phone Book (75xx, 76xx, 77xx only)
Management/Administration	Logging (Server based)Spectralink Device Profile in CUCM
Voice Quality	Codecs: G.711 (default), G.729 (optional)
Value added Spectralink fea- tures	 Rich APIs for third-party solutions integration Multi-language (on handsets) Paging Safe Worker

Spectralink IP-DECT/DECT Server

Below is a description of how to configure the Spectralink IP-DECT/DECT Server and how to add users and handsets to the system.

Configuring the Spectralink IP-DECT/DECT Server

General Settings

- 1. Click Configuration, the General Configuration page displays.
- 2. Check that the **Hostname (FQDN)** field is left blank under **DNS** settings when connected to the Cisco Unified Server.
- 3. Click **Save**, and then reboot the system.

SIP Settings

The Spectralink IP-DECT/DECT Server requires a few SIP settings to be adjusted in order to connect properly to the Cisco Unified Server.

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Note:

SIP settings not mentioned below should be left at their default values.

To modify the SIP settings from the web based Administration Page:

- 1. Click Configuration, and then click SIP.
- 2. Modify the settings below.

Field	Setting	
SIP Configuration - General		
Transport	UDP	
Default domain	For a standalone CUCM enter the IP address of the Cisco Unified Communications Manager. For a CUCM cluster or if a SRST router is present enter the Cluster Fully Qualified Domain Name (to be found in CUCM by navigating to Cisco Unified CM Administration > System > Enterprise Parameters).	
Register each endpoint on sep- arate port	Enable	
Send all messages to current	Enable	
	Note : Only relevant if more proxies are available.	

Field	Setting	
SIP Configuration - Proxies		
Proxies	If the Cluster Fully Qualified Domain Name is entered in the Default domain field, fill in the IP addresses or hostnames of the CUCM servers in prioritized order.	
SIP Configuration - DTMF signalling		
Send as RTP	Ensure that this feature is enabled to make DTMF tones work.	
Offered RFC2833 payload type	Value must be set to 101.	



Note:

In order for the Spectralink IP-DECT/DECT Server to support Cisco Unified Survivable Remote Site Telephony (SRST) within a CUCM setup with a SRST router, this feature must be configured in the CUCM. For more information, see Cisco documentation.

Example using a standalone CUCM configuration:

SIP Configuration		
General		
Local port * **	5060	
Transport * **	UDP 🗸	
DNS method * **	A records 🗸	2
Default domain * **	172.29.193.102]
Register each endpoint on separate port **	\checkmark	
Send all messages to current registrar **		

Example using a CUCM cluster solution:

5060
UDP V
A records V
cucm.example.com
\checkmark
\checkmark
3600
Ignore V
70
4000
96
3
\checkmark
\checkmark
Priority Weight URI
1 100 cucmpub.example.com
2 100 cucmsub.example.com
3 100
4 100

SIP Configuration

3. Click **Save**, and then reboot the system.

For an example of the configuration XML file from your Spectralink IP-DECT Server, see "Example of XML Configuration File" on page 25.

Enabling Feature Codes for Use of the Call forward Unconditional Feature

The advanced feature, **Call forward unconditional**, is accessed by dialing special feature codes from the DECT handsets. To provide access to the **Call forward unconditional** feature, the feature codes must be enabled.

To Enable Feature Codes from the Web Based Administration Page

1. If using Spectralink IP-DECT 200/400/6500, click **Configuration**, and then click **Wireless Server**.

If using Spectralink DECT 2500/8000, click Configuration, and then click DECT Server.

2. Under Feature codes/SIP Users Feature Codes, mark the Enable check box to make the Spectralink IP-DECT Server react to the feature codes.

The default features codes can be modified to match local CUCM Feature Access Codes.

Feature codes	
Enable	
Call forward unconditional - enable	*21*\$#
Call forward to voice mail - enable	*21*
Call forward unconditional - disable	#21#
Language	
Phone Language **	English V
S	ave Cancel

3. Click Save.



Note:

The Call Forward Unconditional feature can be activated permanently at subscription time by the service provider. By modifying the Rerouting Calling Search Space option, this will provide the sufficient rights for the handset to action the CFU on the CUCM.

The Directory Number Configuration page defines some fields that let one set calling search spaces associated with call forwarding: Call Forward All Calling Search Space, Call Forward Busy Calling Search Space (internal and external), Call Forward No Answer Calling Search Space (internal and external), Call Forward No Coverage Calling Search Space (internal and external), Call Forward No Coverage Calling Search Space (internal and external), Call Forward No Coverage Calling Search Space (internal and external). Using these fields, one can forward a user's calls to destinations the user could not normally call directly. Conversely, the user can be prevented from forwarding calls to certain destinations, even if the user could normally dial such destinations directly.

One can configure calling search space for Forward All, Forward Busy, Forward No Answer, Forward No Coverage, and Forward on CTI Failure directory numbers. The value that one chooses applies to all devices that are using this directory number. It must be configured either primary Forward All Calling Search Space or Secondary Forward All Calling Search Space or both for Call Forward All to work properly.

If the system is using partitions and calling search spaces, it is recommended to configure the other call forward calling search spaces as well. When a call is forwarded or redirected to the call forward destination, the configured call forward calling search gets used to forward the call. If the forward calling search is none, the forward operation may fail if the system is using partitions and calling search spaces.

Adding Users and Handsets

Each individual DECT user/handset must be added to the Spectralink IP-DECT/DECT Server and later on to the Cisco Unified Communications Manager.

This section describes how to add the handsets to the Spectralink IP-DECT/DECT Server.

To Add Users to the IP-DECT/DECT Server from the Web Based Administration Page

1. If using Spectralink IP-DECT 200/400/6500, click **Users**, click **List Users**, and then click **New**.

If using Spectralink DECT 2500/8000, click Users, click Overview, and then click New.

2. Enter the required information:

Field	Setting	
Interface (only Spectralink DECT Server 2500/8000)		
Line type	Select SIP .	
DECT device		
IPEI (optional)	If a specific handset is being subscribed for this extension, enter the IPEI number of the actual handset. (The IPEI number is readable from the label on the product). If this is not the case this field can be left empty and it will auto-fill when the handsets subscribe.	
	Note : A SIP REGISTER will not be sent before there is an IPEI number present.	
Access code (optional)	Administrators can define a system wide or indi- vidual access code as extra wireless security during the subscription process.	
	Note : Some 3rd party phones may need an Access code to register to the Spectralink IP-DECT/DECT Server.	
User		
Local Number (DN) (only Spectralink DECT Server)	The local number (DN) is required on Spec- tralink DECT Server 2500/8000.	

Field	Setting
Standby text (optional)	A standby text is a fixed label shown in the top left part of the screen on the DECT handset when in idle state.
	Note : This feature is only available if Spectralink DECT handsets are being used. If third party DECT handsets are being subscribed, this feature is not supported.
SIP	
SIP Username (optional) (only on Spec- tralink DECT Server)	If not defined, then the SIP Username is auto- matically set to Local Number.
Username/Extension (only on Spec- tralink IP-DECT Server)	The actual directory number of the handset defined in the Cisco Unified CM.
	Note : This field must be unique within the Spec- tralink IP-DECT Server. If simultaneous ring on two or more handsets is required, a Cisco Uni- fied CM ring group must be set up.
Display name (optional)	The name of the user can be entered here. The Cisco Unified CM will not use this but it may ease the administration of users within the Spec- tralink IP-DECT Server.
Authentication user	Enter the user ID of the CUCM end user. E.g. rchristensen
Authentication password	Enter the digest credential of the CUCM end user.
Features	
Call forward unconditional	A Call Forward Unconditional can be added/re- moved via the Web interface.

User	9130	
DECT device		
Model	Spectralink 7622	
Software part number	14225100	
Item number	02640000	
Firmware	15Q	
HW version	6	
Production Id	000F 835D 1F81 93D0	
IPEI	05003 0366518	
Access code		
User		
Standby text	Ext. 9130	
Disabled		
SIP		
Username / Extension *	9130	
Domain		
Displayname	Spectralink 9130	
Authentication user	rchristensen	
Authentication password	••••	
Features		
Call forward unconditional		
Save Delete Cancel *) Required field		

- 3. Click Save.
- 4. When the users have been added to the Spectralink IP-DECT/DECT Server, the handsets must be DECT subscribed in order to be able to communicate with the Spectralink IP-DECT/DECT Server. Please refer to the relevant handset documentation for this.



Note:

To be able to register Spectralink DECT Handsets, phone licenses for 3rd party SIP are required. For more information on License Unit Calculation and download of phone licenses to CUCM, see the Cisco documentation.

Cisco Unified Communications Manager

Below is a description of how to prepare the Cisco Unified Communications Manager, how to setup phone security profile, how to add end users, how to add the DECT handsets either manually or using the Bulk Administration Tool. Each individual DECT handset must be added as a 3rd party SIP device in CUCM and the Spectralink IP-DECT/DECT Server itself will not be added and known to the CUCM.

Setting up Phone Security Profile

This section describes how to build a unique Phone Security Profile for the Spectralink IP-DECT/DECT Server or utilize an existing Phone Security Profile as long as it conforms to the recommended values below.

- 1. Navigate to Cisco Unified CM Administration > System > Security > Phone Security Profile.
- 2. Click Add New.
- 3. In the **Phone Security Profile Type** list, select **Third-party SIP Device (Basic)**, and then click **Next**.
- 4. On the **Phone Security Profile Configuration** page, enter relevant data in the following fields:

Field	Setting	
Device Protocol		
Name	Enter the relevant name.	
Description	Enter description.	
Enable Digest Authentication	Enable.	

Phone Security Profile Configuration			
Save			
— Status ———			
) Status: Ready			
Phone Security Profile Information			
Product Type:	Third-party SIP Device (Basic)		
Device Protocol:	SIP		
Name*	Spectralink IP-DECT 3-party SIP	×	
Description	Spectralink IP-DECT 3-party SIP		
Nonce Validity Time*	600		
Transport Type*	TCP+UDP	\checkmark	
☑ Enable Digest Aut	hentication		
- Parameters used i	n Phone		
SIP Phone Port* 506	0		
Save			

5. Click Save.

Adding DECT Handsets to CUCM Database

This section describes how to add the individual Spectralink DECT Handsets to the Cisco Unified Communications Manager.

Each individual DECT handset is identified by a unique IPEI number, which is generated by the Spectralink IP-DECT/DECT Server. This IPEI number can be compared to the MAC address, which identifies the Cisco IP Phones. The IPEI number of a specific DECT handset can be viewed by editing the user in the Spectralink IP-DECT/DECT Server.

Two different methods for adding handsets are supported:

- Manual end user/handset creation
- Automated end user/handset provisioning using the Bulk Administration Tool

Manual End User/Handset Creation in CUCM

Manual handset creation consists of the following two tasks:

- Adding new end users manually
- Adding handsets manually

To Add End Users Manually

- 1. Navigate to Cisco Unified CM Administration > User Management > End User.
- 2. Click Add new.
- 3. On the End User Configuration page, enter relevant data in the following fields:

Field	Setting	
User Information		
User Id	Enter the relevant user ID. E.g. rchristensen	
Password	Enter a password.	
	(If you are LDAP integrated, this field will be grayed out and unavailable, and you would cre- ate or modify this password through the Active Directory Server. This password is not used by the Spectralink IP-DECT/DECT Server, but it is good practice to assign a password for each user).	
Confirm Password	Confirm the password.	

Field	Setting
Self Service User ID (optional)	Enter the relevant self service user ID, e.g. 9130 (We may use the extension number we intend for the device. This is not used by Spectralink IP-DECT/DECT Server, but the user might wish to utilize this to enter the Self Service Web portal)
Pin (optional)	Enter a pin if you wish the user to take advant- age of pin enabled features such as user web login. E.g. 1234
Confirm Pin	Repeat the value you entered in the field above.
Last name	Enter last name. E.g. Christensen
Digest Credentials	Enter relevant digest credentials, e.g. 9130 (Enter the Digest Authentication Password you would like the handset to use to register. This will correspond with the authentication pass- word in the user configuration).
Confirm Digest Credentials	Repeat the value you entered in the field above.

End User Configuration	n	
— Status —		
i Status: Ready		
- User Information	Enabled Local User	
User ID*	rchristensen	
Password	•••••	Edit Credenti
Confirm Password	•••••	
Self-Service User ID	9130	
PIN	•••••	Edit Credenti
Confirm PIN	••••••	
Last name*	Christensen	
Middle name		
First name		
Display name		
Title		
Directory URI		
Telephone Number		
Home Number		
Mobile Number		
Pager Number		
Mail ID		
Manager User ID		
Department		
User Locale	< None >	~
Associated PC		
Digest Credentials	••••••	
Confirm Digest Credentials	· · · · · · · · · · · · · · · · · · ·	
User Profile	Use System Default("Standard (Factory Default) Us	✓ <u>View Details</u>

- 4. Click Save.
- 5. Click Add New and repeat the procedure if you want to add another new end user.

To Add Handsets Manually

- 1. Navigate to **Cisco Unified CM Administration > Device > Phone**.
- 2. Click Add new.
- 3. In the Phone Type list, select Third-party SIP Device (Basic), and then click Next.

Add a New Phone		
Next		
- Status i Status: Ready		
 Create a phone using t Phone Type* 	the phone type or a phone template — Third-party SIP Device (Basic)	~
or O BAT Phone Template	* Not Selected	~

4. On the **Phone Configuration** page, enter relevant data in the following fields:

Field	Setting	
Device Information		
Device Name	Enter (copy and paste) the IPEI number from the user on the IP-DECT/DECT Server into the Device Name field.	
Device Pool	Select Default.	
Phone Button Template	Select Third-party SIP Device (Basic)	
Owner User ID	Select the relevant Owner User ID.	
Protocol Specific Information		
Device Security Profile	Select Spectralink IP-DECT 3-party SIP Device Basic.	
SIP Profile	Select Standard SIP Profile.	
Digest User	Select the relevant Digest User.	
	Note : The Digest User must be identical to the Owner User ID.	

- Status			
i Status: Ready			
Phone Type Product Type: Third-party SIP Device Protocol: SIP	Device (Basic)		
Device Information]
A Device is not trusted			
MAC Address*	050030366518		
Description	SEP050030366518		
Device Pool*	Default	 	/iew Details
Common Device Configuration	< None >	~	/iew Details
Phone Button Template*	Third-party SIP Device (Basic)	~	
Common Phone Profile*	Standard Common Phone Profile	~	/iew Details
Calling Search Space	< None >	~	
AAR Calling Search Space	< None >	~	
Media Resource Group List	< None >	\checkmark	
Location*	Hub_None	~	
AAR Group	< None >	\checkmark	
Device Mobility Mode*	Default	~	
Owner	● User ○ Anonymous (Public/Shared Space	e)	
Owner User ID*	9130	\sim	
Use Trusted Relay Point*	Default	\sim	

BLE Presence Group*			
Standard Presence group			
MTP Preferred Originating Codec* 711ulaw			
Device Security Profile* Spectralink IP-DECT 3-party SIP			
Rerouting Calling Search Space < None >			
SUBSCRIBE Calling Search Space < None >			
SIP Profile* View Details			
Digest User vchristensen v			
Media Termination Point Required			
Unattended Port			
Require DTMF Reception			

- 5. When the data is entered, click **Save**, and then click **OK** to apply the configuration.
- 6. In the appearing Association Information, click Add a new DN.



7. On the **Directory Number Configuration** page, enter the relevant Directory Number in the **Directory Number** field.

Directory Number Information				
Directory Number*	9130	× Urgent Priority		
Route Partition	< None >	\checkmark		
Description				
Alerting Name				
ASCII Alerting Name				
External Call Control Profile	< None >	\checkmark		
Active				

Note:

The Directory Number must be the same as the **Username/Extension** field in the User setup on the Spectralink IP-DECT/DECT Server.

8. Click Save, and then click OK to apply the configuration.

 Directory Number Information 	nation —	
Directory Number*	9130	Urgent Priority
Route Partition	< None >	
Description		
Alerting Name		
ASCII Alerting Name		
External Call Control Profile	< None >	
Associated Devices	SEP050030366518	
		Edit Device
		Edit Line Appearance
	<u> </u>	
Dissociate Devices		

 In the Associated Devices field, make sure that the SEBxxxxxxxxx appears as an associated device.

You can now return to the list of devices.

The CUCM will show the registration status of the device.



The registration should look like this on the IP-DECT Server List Users page:

Enabled	User	Displayname	† IPEI	Handset	Firmware	Subscription	• Registration	Latest activity
~	9130	Spectralink 9130	05003 0366518	Spectralink 7622	15Q	×	~	 ✓



Note:

It can take a while before the Spectralink IP-DECT/DECT Server sends out a registration request. To speed up the registration process, either reboot the Spectralink IP-DECT/DECT Server or disable/enable the user on the Spectralink IP-DECT/DECT Server.

Automated End User/Handset Provisioning using the Bulk Administration Tool

When adding many handsets to the Cisco Unified Communications Manager it is beneficial to use bulk provisioning in order to automate the handset creation process. The Bulk Administration Tool allows you to import the user list and end user configuration from a CSV file in CUCM format into the database.

The process of bulk provisioning handsets using the Bulk Administration Tool consists of the following four tasks:

- Ensure activation of the bulk provisioning service
- Creation of a bat.xlt containing all relevant user information.
- Import of bat.xlt file containing the handset data using the Bulk Administration Tool
- Creation of templates for inserting the handsets

For more information on using bulk provisioning, see the Cisco documentation.

Example of XML Configuration File

```
<?xml version="1.0" encoding="UTF-8" standalone="true"?>
<config>
       <application>
               <enable msf>true</enable msf>
               <enable rpc>false</enable rpc>
               <internal messaging>true</internal messaging>
               <username>GW-DECT/admin</username>
       </application>
       <dect>
               <auth call>true</auth call>
               <encrypt_voice_data>Disabled</encrypt_voice_data>
               <global_tx_power>0</global_tx_power>
               <send date time>true</send date time>
               <subscription allowed>true</subscription allowed>
       </dect>
       <feature_codes>
               <call forward>
                       <unconditional>
                                <disable>#21#</disable>
                                <enable>*21*$#</enable>
                       </unconditional>
                       <voicemail>
                                <enable>*21*</enable>
                       </voicemail>
               </call forward>
               <conference>
                       <meetme>**5$</meetme>
               </conference>
               <enable>true</enable>
               <pickup>
                       <group other>**8</group other>
                       <local>**3</local>
               </pickup>
       </feature codes>
       <language>en</language>
       <license>[CISCO license]</license>
       <log>
               <syslog>
                       <facility>16</facility>
                       <level>info</level>
                       <port>514</port>
               </syslog>
       </log>
       <network>
               <bootproto>dhcp</bootproto>
               <hostname></hostname>
               <ipaddr>10.8.10.150</ipaddr>
               <ipv6>
                       <method>disabled</method>
               </ipv6>
               <netmask>255.255.255.0</netmask>
               <ntp>dk.pool.ntp.org</ntp>
               <timezone>CET-1CEST-2,M3.5.0/02:00:00,M10.5.0/03:00:00</timezone>
```

```
</network>
<rfp>
        <default_sync_type>radio</default_sync_type>
        <ptp>
                <transport>12</transport>
        </ptp>
</rfp>
<securitv>
        <allow_new_media_resource>true</allow_new_media_resource>
        <allow_new_rfp>true</allow_new_rfp>
</security>
<sip>
        <callwaiting>true</callwaiting>
        <client_transaction_timeout>4000</client_transaction_timeout>
        <dect_detach_action>ignore</dect_detach_action>
        <defaultdomain>172.29.193.102</defaultdomain>
        <dnsmethod>arecord</dnsmethod>
        <dtmf>
                <duration>270</duration>
                <info>false</info>
                <rtp>true</rtp>
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