

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

Interoperability Guide

Cisco Unified Communications Manager (CUCM)

3rd party SIP installation

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Contact Information

US Location

+1 800-775-5330

Spectralink Corporation
2560 55th Street
Boulder, CO 80301
USA

info@spectralink.com

Denmark Location

+45 7560 2850

Spectralink Europe ApS
Byholm Soepark 21 E Stuen
8700 Horsens
Denmark

infoemea@spectralink.com

UK Location

+44 (0) 20 3769 9800

Spectralink Europe UK
329 Bracknell, Doncastle Road
Bracknell, Berkshire, RG12 8PE
United Kingdom

infoemea@spectralink.com

Contents

About This Guide	4
Spectralink References	5
<i>Related Documentation.....</i>	<i>5</i>
Spectralink IP-DECT Server	6
Configuring the Spectralink IP-DECT Server	6
<i>General Settings</i>	<i>6</i>
<i>SIP Settings</i>	<i>6</i>
<i>Enabling Feature Codes for Use of the Call forward Unconditional Feature</i>	<i>9</i>
Adding Users and Handsets	10
<i>To add users to the IP-DECT Server from the web based Administration Page</i>	<i>10</i>
Cisco Unified Communications Manager	13
Setting up Phone Security Profile	13
Adding DECT Handsets to CUCM Database	14
<i>Manual End User/Handset Provisioning in CUCM.....</i>	<i>15</i>
<i>Automated end user/handset provisioning using the Bulk Administration Tool</i>	<i>21</i>
Example of XML Configuration File.....	22

About This Guide

This guide describes how to configure a Spectralink IP-DECT Server 400/6500 and Spectralink DECT Server 2500/8000 for connecting to a Cisco Unified Communications Manager as 3rd party SIP.

In the following both servers will be referred to as “Spectralink IP-DECT”. 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 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 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)
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 CUCM license installed it is also possible to export handset information from the IP-DECT Server to be imported directly to the CUCM.

For more information, see the relevant Interoperability Guide.

Interoperability testing between the Spectralink IP-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.

The guide is divided into two parts:

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

Each part describes the general one-time configuration and the user administration.



Note

To support the configuration described in this guide, the IP-DECT Server must have firmware version (400/6500 PCS14A_ or 2500/8000 PCS14B_) or newer. The examples in this guide are made with IP-DECT Server firmware PCS16F_ and Cisco Unified CM version 11.0.

Spectralink References

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

Related Documentation

For information about the Spectralink IP-DECT Servers and Cisco Unified Communications Manager not covered in this guide, refer to the following documentation:

Related Documentation

<i>Subject</i>	<i>Documentation</i>
Spectralink IP-DECT Server	Spectralink IP-DECT Server Configuration Guide
Cisco Unified Communications Manager	Navigate to the Cisco documentation site for the latest Cisco documentation
Release Notes	Find them in the download section of the support site
Handset	Handset User Guide

Spectralink IP-DECT Server

This section describes how to configure the Spectralink IP-DECT Server and how to add users and handsets to the system.

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



Note

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

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

- 4 Click **Configuration**, and then click **SIP**.
- 5 Modify the settings below.

<i>Field</i>	<i>Setting</i>
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 separate port	Enable

Field	Setting
Send all messages to current registrar	Enable Note: Only relevant if more proxies are available.
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.

**Note**

In order for the Spectralink IP-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 * **	<input type="text" value="5060"/>
Transport * **	<input type="text" value="UDP"/>
DNS method * **	<input type="text" value="A records"/>
Default domain * **	<input type="text" value="172.29.193.102"/>
Register each endpoint on separate port **	<input checked="" type="checkbox"/>
Send all messages to current registrar **	<input type="checkbox"/>



Example using a CUCM cluster configuration:

SIP Configuration

General			
Local port * **	<input type="text" value="5060"/>		
Transport * **	<input type="text" value="UDP"/>		
DNS method * **	<input type="text" value="A records"/>		
Default domain * **	<input type="text" value="cucm.example.com"/>		
Register each endpoint on separate port **	<input checked="" type="checkbox"/>		
Send all messages to current registrar **	<input checked="" type="checkbox"/>		
Registration expire(sec) *	<input type="text" value="3600"/>		
Handset power off action	<input type="text" value="Ignore"/>		
Max forwards *	<input type="text" value="70"/>		
Client transaction timeout(msec) *	<input type="text" value="4000"/>		
SIP type of service (TOS/Diffserv) * **	<input type="text" value="96"/>		
SIP 802.1p Class-of-Service *	<input type="text" value="3"/>		
GRUU	<input checked="" type="checkbox"/>		
Use SIPS URI	<input type="checkbox"/>		
TLS allow insecure **	<input type="checkbox"/>		
TCP ephemeral port in contact address **	<input checked="" type="checkbox"/>		
Proxies			
	Priority	Weight	URI
Proxy 1 **	<input type="text" value="1"/>	<input type="text" value="100"/>	<input type="text" value="cucmpub.example.com"/>
Proxy 2 **	<input type="text" value="2"/>	<input type="text" value="100"/>	<input type="text" value="cucmsub.example.com"/>
Proxy 3 **	<input type="text" value="3"/>	<input type="text" value="100"/>	<input type="text"/>
Proxy 4 **	<input type="text" value="4"/>	<input type="text" value="100"/>	<input type="text"/>

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

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

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:

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

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

- 8 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	<input checked="" type="checkbox"/>
Call forward unconditional - enable	<input type="text" value="*21*\$#"/>
Call forward to voice mail - enable	<input type="text" value="*21*"/>
Call forward unconditional - disable	<input type="text" value="#21#"/>
Language	
Phone Language **	<input type="text" value="English"/> ▼
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

- 9 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). 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 handset/user must be added to the Spectralink IP-DECT Server and later on to the Cisco Unified Communications Manager. This section describes how to add the handsets to the Spectralink IP-DECT Server.

To add users to the IP-DECT Server from the web based Administration Page

- 1 If using Spectralink IP-DECT 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 Registration**.

2 Enter the required information:

<i>Field</i>	<i>Setting</i>
DECT device	
IPEI (optional)	<p>If a <i>specific</i> 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.</p> <p>Note: A SIP REGISTER will not be sent before there is an IPEI number present.</p>
Access code (optional)	<p>Admins can define a system wide or individual access code as extra wireless security during the subscription process.</p> <p>Note: Some 3rd party phones may need an Access code to register to the Spectralink IP-DECT Server.</p>
User	
Standby text (optional)	<p>A standby text is a fixed label shown in the top left part of the screen on the DECT handset when in idle state.</p> <p>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.</p>
SIP	
Username/Extension	<p>The actual directory number of the handset defined in the Cisco Unified CM.</p> <p>Note: This field must be unique within the IP-DECT Server. If simultaneous ring on two or more handsets is required, a Cisco Unified CM ring group must be set up.</p>
Display name (optional)	<p>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 Spectralink IP-DECT Server.</p>
Authentication user	<p>Enter the user ID of the CUCM end user. E.g. rchristensen</p>
Authentication password	<p>Enter the digest credential of the CUCM end user.</p>
Features	

Field	Setting
Call forward unconditional	A Call Forward Unconditional can be added/removed 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	<input type="text" value="05003 0366518"/>
Access code	<input type="text"/>
User	
Standby text	<input type="text" value="Ext. 9130"/>
Disabled	<input type="checkbox"/>
SIP	
Username / Extension *	<input type="text" value="9130"/>
Domain	<input type="text"/>
Displayname	<input type="text" value="Spectralink 9130"/>
Authentication user	<input type="text" value="rchristensen"/>
Authentication password	<input type="password" value="••••"/>
Features	
Call forward unconditional	<input type="text"/>
<input type="button" value="Save"/> <input type="button" value="Delete"/> <input type="button" value="Cancel"/>	
*) Required field	

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



Note

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.

Cisco Unified Communications Manager

This section describes 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 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 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:

<i>Field</i>	<i>Setting</i>
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* X

Description

Nonce Validity Time*

Transport Type* v

Enable Digest Authentication

Parameters used in Phone

SIP Phone Port*

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 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 Server.

Two different methods for adding handsets are supported:

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

Manual End User/Handset Provisioning in CUCM

Manual handset provisioning 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:

<i>Field</i>	<i>Setting</i>
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 create or modify this password through the Active Directory Server. This password is not used by the Spectralink IP-DECT Server, but it is good practice to assign a password for each user).
Confirm Password	Confirm the password.
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 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 advantage 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 <i>authentication password</i> in the user configuration.)
Confirm Digest Credentials	Repeat the value you entered in the field above.

End User Configuration

 Save
 Delete
 Add New

Status

 Status: Ready

User Information

User Status	Enabled Local User	
User ID*	<input type="text" value="rchristensen"/>	
Password	<input type="password" value="....."/>	<input type="button" value="Edit Credentials"/>
Confirm Password	<input type="password" value="....."/>	
Self-Service User ID	<input type="text" value="9130"/>	
PIN	<input type="password" value="....."/>	<input type="button" value="Edit Credentials"/>
Confirm PIN	<input type="password" value="....."/>	
Last name*	<input type="text" value="Christensen"/>	
Middle name	<input type="text"/>	
First name	<input type="text"/>	
Display name	<input type="text"/>	
Title	<input type="text"/>	
Directory URI	<input type="text"/>	
Telephone Number	<input type="text"/>	
Home Number	<input type="text"/>	
Mobile Number	<input type="text"/>	
Pager Number	<input type="text"/>	
Mail ID	<input type="text"/>	
Manager User ID	<input type="text"/>	
Department	<input type="text"/>	
User Locale	<input type="text" value=" < None >"/>	<input type="button" value="v"/>
Associated PC	<input type="text"/>	
Digest Credentials	<input type="password" value="....."/>	
Confirm Digest Credentials	<input type="password" value="....."/>	
User Profile	<input (factory="" default)="" standard="" type="text" us"="" value="Use System Default("/>	<input type="button" value="v"/> View Details

4 Click **Save**.

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

Status: Ready

Create a phone using the phone type or a phone template

Phone Type*



or

BAT Phone Template*

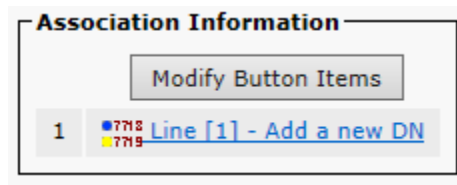
Next

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

<i>Field</i>	<i>Setting</i>
Device Information	
Device Name	Enter the IPEI number from the user on the IP-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	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	
	Status: Ready
Phone Type	
Product Type:	Third-party SIP Device (Basic)
Device Protocol:	SIP
Device Information	
 Device is not trusted	
MAC Address*	<input type="text" value="050030366518"/>
Description	<input type="text" value="SEP050030366518"/>
Device Pool*	Default <input type="button" value="v"/> View Details
Common Device Configuration	< None > <input type="button" value="v"/> View Details
Phone Button Template*	Third-party SIP Device (Basic) <input type="button" value="v"/>
Common Phone Profile*	Standard Common Phone Profile <input type="button" value="v"/> View Details
Calling Search Space	< None > <input type="button" value="v"/>
AAR Calling Search Space	< None > <input type="button" value="v"/>
Media Resource Group List	< None > <input type="button" value="v"/>
Location*	Hub_None <input type="button" value="v"/>
AAR Group	< None > <input type="button" value="v"/>
Device Mobility Mode*	Default <input type="button" value="v"/>
Owner	<input checked="" type="radio"/> User <input type="radio"/> Anonymous (Public/Shared Space)
Owner User ID*	<input type="text" value="9130"/> <input type="button" value="v"/>
Use Trusted Relav Point*	Default <input type="button" value="v"/>
Protocol Specific Information	
BLF Presence Group*	Standard Presence group <input type="button" value="v"/>
MTP Preferred Originating Codec*	711ulaw <input type="button" value="v"/>
Device Security Profile*	Spectralink IP-DECT 3-party SIP <input type="button" value="v"/>
Rerouting Calling Search Space	< None > <input type="button" value="v"/>
SUBSCRIBE Calling Search Space	< None > <input type="button" value="v"/>
SIP Profile*	Standard SIP Profile <input type="button" value="v"/> View Details
Digest User	rchristensen <input type="button" value="v"/>
<input type="checkbox"/> Media Termination Point Required <input type="checkbox"/> Unattended Port <input type="checkbox"/> 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*	<input type="text" value="9130"/>	<input type="checkbox"/> Urgent Priority
Route Partition	<input type="text" value=" < None >"/>	
Description	<input type="text"/>	
Alerting Name	<input type="text"/>	
ASCII Alerting Name	<input type="text"/>	
External Call Control Profile	<input type="text" value=" < None >"/>	
<input checked="" type="checkbox"/> Active		



Note

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

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

Directory Number Information

Directory Number* Urgent Priority

Route Partition ▼

Description

Alerting Name

ASCII Alerting Name

External Call Control Profile ▼

Associated Devices

▼ ▲

Dissociate Devices

- In the **Associated Devices** field, make sure that the SEBxxxxxxxxxxx appears as an associated device.

You can now return to the list of devices.

The CUCM will show the registration status of the device.

<input type="checkbox"/>	Device Name(Line) ^	Description	Device Pool	Device Protocol	Status	IPv4 Address	Copy	Super Copy
<input type="checkbox"/>	SEP050030366518	SEP050030366518	Default	SIP	Registered with HORCUCM11	172.29.194.107		

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

<input type="checkbox"/>	Enabled	User	Displayname	IPEI	Handset	Firmware	Subscription	Registration	Latest activity
<input type="checkbox"/>	✓	9130	Spectralink 9130	05003 0366518	Spectralink 7622	15Q	✓	✓	✓



Note

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

Automated end user/handset provisioning using the Bulk Administration Tool

When adding many handsets to the Cisco Unified Communication Manager it is beneficial to use bulk provisioning in order to automate the handset creation process.

The process of bulk provisioning handsets 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>
  </call_forward>
</feature_codes>
<language>en</language>
-<log>
  <syslog>
    <facility>16</facility>
    <level>info</level>
    <port>514</port>
    <scope_of_settings>all</scope_of_settings>
  </syslog>
</log>
<network>
  <bootproto>dhcp</bootproto>
  <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>
  <media>
    <port>57000</port>
  </media>
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  </ptp>
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  <dnsmethod>arecord</dnsmethod>
  <dtmf>

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  <sdp_ignore_version>>false</sdp_ignore_version>
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  <port3>0</port3>
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-<upnp>
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