Spectralink IP-DECT Server 400/6500, Virtual IP-DECT Server One and DECT Server 8000

Interoperability Guide

Cisco Unified Communications Manager (CUCM)

CUCM license and COP file installation (Advanced features)

14224300-IG, Edition 17.0
May 2022, Original document

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About This Guide

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

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

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

- Third Party SIP device

  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.

  Third party SIP integration has been tested only with CUCM versions up to 11.0

  For more information, see the relevant Interoperability Guide.

- Spectralink IP-DECT/DECT/Virtual IP-DECT – CUCM License and COP file (Cisco Options Package file) installation (recommended) (not relevant to Spectralink IP-DECT/Virtual IP-DECT Server 200) – described in this guide

  Handsets configured with Spectralink IP-DECT profile 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 SpectralinkIP-DECT/DECT/Virtual IP-DECT Server format to be imported to the Spectralink IP-DECT/DECT Server.
  - Export user data from the Spectralink IP-DECT/DECT/Virtual IP-DECT Server in a CSV file in CUCM format to be imported directly to the CUCM.

The guide is divided into three parts:

- Provisioning
- Spectralink IP-DECT/DECT/Virtual IP-DECT Server
- Cisco Unified Communications Manager

Each part describes the general configuration and the user administration.

Infrastructure Version Information

- Interoperability testing between the Spectralink IP-DECT/DECT/Virtual IP-DECT Server and the CUCM was conducted using version 14.0 of the Cisco Unified Communications Manager and firmware PCS 21Cb of the Spectralink IP-DECT/Virtual IP-DECT Server and PCS 21Bc of the Spectralink DECT Server.
- To support the configuration described in this guide, the Spectralink IP-DECT/DECT/Virtual IP-DECT Server must have firmware version (400/6500/One PCS 21Cb, or 8000 PCS 21Bc) or newer.
- Spectralink DECT Handsets 7522/7532, 7622/7642 and 7722/7742 must have firmware PCS 17Ha.
- Spectralink DECT Handset 7502 must have firmware PCS 18C.

Note:

TLS/SRTP is only available on Spectralink IP-DECT/Virtual IP-DECT Servers with firmware PCS 17B or newer and Spectralink DECT Server 8000 with firmware PCS 17Da or newer. TLS/SRTP also requires installation of Host certificates and CA certificates and additional Security (TLS, SRTP) License on the Spectralink IP-DECT/DECT/Virtual IP-DECT Server (the additional license is not required if running PCS 20A_ or newer). From R1-2020 security is available without license.

Note:

The examples in this guide are made with IP-DECT Server firmware PCS 16F and Cisco Unified CM version 11.0.

Available Licenses

- Cisco Unified CM (Advanced Features) | IP-DECT Server 400 (part no. 14075490)
- Cisco Unified CM (Advanced Features) | IP-DECT Server 6500 (part no. 14075495)
- Cisco Unified CM (Advanced Features) | Virtual IP-DECT Server (part no. 14233255)
- Cisco Unified CM (Advanced Features) | DECT Server 2500 (part no. 14075491)
- Cisco Unified CM (Advanced Features) | DECT Server 8000 (part no. 14075496)

Related Documentation

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

Subject	Documentation
Cisco Unified Communications Manager	Navigate to the Cisco documentation site for the latest Cisco documentation.
Cisco Jabber	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 http://support.spectralink.com/products.
Site Survey Function in Handset	For more information about the site survey function in handset, refer to the guide available online at http://support.spectralink.com/products.
Synchronization and Deployment Guide	For more information about synchronization and deployment, refer to the guide available online at http://support.spectralink.com/products.
Spectralink IP-DECT/DECT/Virtual IP-DECT Server	For more information about the server, refer to the guide available online at http://support.spectralink.com/products.
Provisioning	For more information about provisioning, refer to the 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, 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 material, you must attend training and become Spectralink Certified Specialist. Please visit http://partneraccess.spectralink.com/training/classroom-training for more information and registration.

Feature List

Note:

All features marked with * require installation of a CUCM License in the Spectralink IP-DECT/DECT/Virtual IP-DECT Server and a COP file in the CUCM.

The following features are supported:

	Supported features

Telephony	• Basic Calling
	• Call Hold
	• Call Transfer
	• Call Waiting
	• Call Forward (all endpoints) *
	• Message Waiting
	• Directed Call Park
	• SIP Transport Methods:
	  • UDP
	  • TCP
	  • TLS (Requires acquisition of additional Security (TLS, SRTP) License if not running PCS 20A_ or newer. From R1-2020 security is available without license.
	• FAC (Forced Authorization Codes) (72x2, 75x2, 76x2, 77x2 only) *
	• CMC (Client Matter Codes) (72x2, 75x2, 76x2, 77x2 only) *
	• Call Pickup (Group Directed) *
	• Conference Meet-Me (only with G.711) *
	• Shared Line *
	• Bulk Provisioning for CUCM *
	• Busy Lamp Field
	• Ad-hoc Conferencing (7522/7532, 76x2, 77x2 only) *
	• Music on Hold (MOH) *
	• Call Completed Elsewhere

User experience	• SIP URI Support Phone Book (75x2, 76x2, 77x2 only)
Security	• TLS * • SRTP *

	Supported features
Management/Administration	• Logging (Server based) • Spectralink Device Profile in CUCM • Bulk Administration *
Voice Quality	• Codecs: G.711 (default), G.729 (optional)
Value added Spectralink features	• Rich APIs for third-party solutions integration • Multi-language (on handsets) • Paging • Safe Worker
*) All features marked with * require installation of a CUCM License in the Spectralink IP-DECT/DECT/Virtual IP-DECT Server and a COP file in the CUCM.	

Configuration and Feature Details

Supported features	Description/Setting
Basic Calling	Allows user to make and answer calls.
Call Hold	Allows user to put a call on hold.
Call Transfer	Allows user to transfer the active call to some other number.
Call Waiting	Allows user to answer another incoming call when already in an active call. For more information, see **Configuration** > **SIP** > **Call status** and parameter description in the web based Administration Page of the server.
Call Forward (all endpoints including DECT, PBX and other devices)	Allows the user to: • Call forward unconditional - enable Enable **Call forward unconditional** by dialing this code ***21***, followed by the desired extension ($ = extension) and **#**. E.g.: ***21*$#** • Call forward unconditional - disable Disable **Call forward unconditional** by dialing this code **#21#**. For more information, see "Enabling Feature Codes" on page 19.
Message Waiting	Allows users to know that they have new or unheard voice mail messages.
Directed Call Park	The Call Park feature allows user to place a call on hold so that can be retrieved from another phone in the Cisco Unified Communications Manager (e.g. a phone in another office or in a conference room).
SIP Transport Methods	SIP is designed to be independent of the underlying transport layer protocol. Following Transport Methods are supported: • UDP • TCP • TLS (Requires acquisition of additional Security (TLS, SRTP) License if not running PCS 20A_ or newer. From R1-2020 security is available without license. For more information, see "SIP Settings" on page 15.

Supported features	Description/Setting
Shared Line including Call Completed Elsewhere	Allows calls in a shared line configuration to be completed elsewhere without showing up as a missed call on multiple devices if handled.
Bulk Provisioning for CUCM	You can schedule bulk transactions and specify a time when they need to start these transactions. For more information, see "Exporting CUCM Formatted CSV File for Use in CUCM/Bulk Provisioning" on page 28.
Busy Lamp Field	Busy Lamp Field is a CUCM Presence feature that allows a user to monitor the status (in-call or idle) of another user (only from the CUCM side towards Spectralink DECT Handsets).
Ad-hoc Conferencing (7522/7532, 76x2, 77x2 only)	Allows users to create an ad-hoc conference.
Music on Hold (MOH)	The integrated Music on Hold (MOH) feature allows users to place on-net and off-net users on hold with music that is streamed from a streaming source. For more information, see **Configuration** > **SIP** > **Call status** and parameter description in the web based Administration Page of the server.
FAC (Forced Authorization Codes) (72x2, 75x2, 76x2, 77x2 only)	Allows you to manage call access and accounting. Forced Authorization Codes regulate the types of calls that certain users can place. The Forced Authorization Codes feature forces the user to enter a valid authorization code before the call completes.
CMC (Client Matter Codes) (72x2, 75x2, 76x2, 77x2 only)	Allows you to manage call access and accounting. Client Matter Codes assists with call accounting and billing for billable clients. Client Matter Codes force the user to enter a code to specify that the call relates to a specific client matter.
Call Pickup (Group and Local Directed)	Enable Call Pickup Local by dialing this code ****3**. Enable Call Pickup Other Groups by dialing this code ****8**. For more information, see "Enabling Feature Codes" on page 19.
Conference Meet-Me (only with G.711)	Enable Conference Meet-Me by dialing this code ****5$**. For more information, see "Enabling Feature Codes" on page 19.

Using Provisioning

It is possible to have firmware bin files, configuration XML files and user XML files provisioned into the Spectralink IP-DECT/DECT/Virtual IP-DECT Server. For more information about provisioning in general, see the Provisioning Guide.

Provisioning of User Data and CUCM Device Names

User data and CUCM device names must be generated for both Spectralink IP-DECT/DECT/Virtual IP-DECT Server and CUCM when adding the devices to the Cisco Unified Communications Manager. It is possible to create user XML files containing CUCM device names to be used for provisioning.

The advantage of provisioning a user XML file is that you can:

- predefine user data and CUCM device names without having the Spectralink IP-DECT/DECT/Virtual IP-DECT Server and Cisco Unified Communications Manager running.
- save time by creating many users at the same time instead of manually creating each user on first the Spectralink IP-DECT/DECT/Virtual IP-DECT Server and then on the Cisco Unified Communications Manager.

Provisioning through Third Party Provisioning Tools

If using a third party provisioning tool that create valid user XML files for both the Spectralink IP-DECT/DECT/Virtual IP-DECT Server as well as the Cisco Unified Communications Manager, then the user XML file containing CUCM device names can be provisioned directly into both the Spectralink IP-DECT/DECT/Virtual IP-DECT Server and the Cisco Unified Communications Manager.

Using third party provisioning tools for creation and provisioning of the user XML file, you do not need to follow the manual instructions in this guide (assuming that you have the equipment, a CUCM License and relevant certificates installed already). Instructions for creating configuration files etc. must be followed regardless. For more information, see the Provisioning Guide and third party documentation.

Note:

If not using third party provisioning tools, you must follow the manual instructions in this guide.

This will allow you to:

- Provision a user XML file for the Spectralink IP-DECT/DECT/Virtual IP-DECT Server
- Export a CUCM formatted CSV file to be used for Bulk Provisioning

For more information, see "To Add Users Creating User XML File Manually for Provisioning" on page 26, "Example of User XML File Containing Predefined CUCM Device Names" on page 27 and "Exporting CUCM Formatted CSV File for Use in CUCM/Bulk Provisioning" on page 28.

Spectralink IP-DECT/DECT/Virtual IP-DECT Server

Below is a description of how to order and load the Cisco Unified CM (Advanced Features) License, configure the Spectralink IP-DECT/DECT/Virtual IP-DECT Server and how to add users and handsets to the system. It also describes how to export a CSV file in CUCM format from the Spectralink IP-DECT/DECT/Virtual IP-DECT Server, to be used when importing new handsets into the Cisco Unified Communications Manager.

Using TLS/SRTP on the Spectralink IP-DECT/DECT/Virtual IP-DECT Server also requires installation of Host certificate and CA certificate and - if not running PCS 20A_ or newer - a Security (TLS, SRTP) License to be ordered and loaded. From R1-2020 security is available without license.

Note:

TLS/SRTP is only available on Spectralink IP-DECT/Virtual IP-DECT Servers with firmware PCS 17B or newer and Spectralink DECT Server 8000 with firmware PCS 17Da or newer. TLS/SRTP also requires installation of Host certificates and CA certificates and additional Security (TLS, SRTP) License on the Spectralink IP-DECT/DECT/Virtual IP-DECT Server (the additional license is not required if running PCS 20A_ or newer). From R1-2020 security is available without license.

To Order a License

The Spectralink IP-DECT/DECT/Virtual IP-DECT Server requires a Cisco Unified CM (Advanced Features) License to enable advanced registration and associated features.

If not running PCS 20A_ or newer, using TLS/SRTP on the Spectralink IP-DECT/DECT/Virtual IP-DECT Server also requires a Security (TLS, SRTP) License. From R1-2020 security is available without license.

Licenses can be ordered through normal Spectralink channels.

1. Send your Purchase Order (PO) including the software part number and the number of licenses needed to Spectralink Order Management via (EMEA and APAC) emeaom@spectralink.com or (NALA) nalaom@spectralink.com.
2. When your order is processed, Order Management will send you an email including an Authentication Product Key for your software license.
3. To activate your software license, use the License Key Generator available at https://keygen.spectralink.com/.

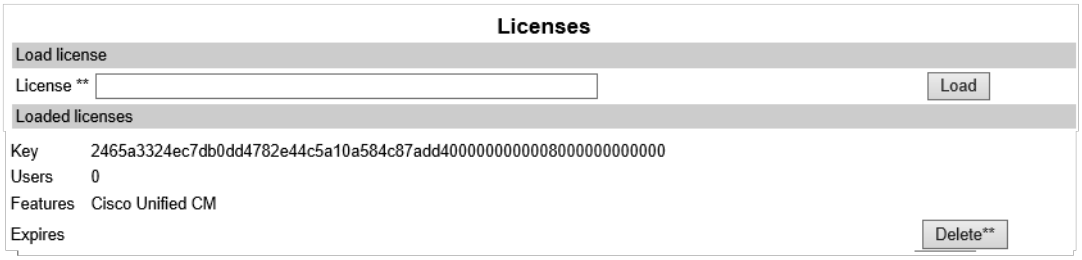
Note:

Please note that once a software license is generated this is locked to the specified ARI code, and cannot be changed.

To Load the License from the Web Based Administration Page

1. If using Spectralink IP-DECT 400/6500/One, click **Administration**, and then click **License**.

   If using Spectralink DECT 8000, click **Installation**, and then click **License**.



2. Copy the provided license key from your email, paste it in the **License** field, and then click **Load**.
3. Reboot the server to activate the license.

Note:

When the Cisco Unified CM (Advanced Features) License is loaded, the SIP signaling is changed to be optimized for Cisco Unified Communications Manager. Some SIP servers will not accept this signaling and the Spectralink IP-DECT/DECT/Virtual IP-DECT Server will be unable to communicate with them. Delete the license to resolve this.

Importing Certificates (if Using TLS)

If using TLS as SIP transport method it is necessary to import following certificates into the Spectralink IP-DECT/DECT/Virtual IP-DECT Server:

- Host certificate
- CA certificate

Note:

TLS/SRTP is only available on Spectralink IP-DECT/Virtual IP-DECT Servers with firmware PCS 17B or newer and Spectralink DECT Server 8000 with firmware PCS 17Da or newer. TLS/SRTP also requires installation of Host certificates and CA certificates and additional Security (TLS, SRTP) License on the Spectralink IP-DECT/DECT/Virtual IP-DECT Server (the additional license is not required if running PCS 20A_ or newer). From R1-2020 security is available without license.

To Import Host Certificate from the Web Based Administration Page

Note:

The imported Host certificate must have a SAN (SubjectAltName) that matches the name of the security profile to be created in the Cisco Unified CM Administration and it must be signed by a CA certificate installed in the Cisco Unified OS Administration.

1. If using Spectralink IP-DECT 400/6500/One, click **Configuration**, and then click **Certificates**. If using Spectralink DECT 8000, click **Installation**, and then click **Certificates**.
2. Under **Host certificate chain**, click **Browse** to find the relevant host certificate file (*.crt file).
3. Under **Host certificate chain**, click **Browse** to find the relevant key file (*.pem file).
4. Select **X.509**.
5. Click **Import Certificate**.
6. Reboot the server.

To Import CA Certificate from the Web Based Administration Page

Note:

The imported CA certificate list must include the CA certificate used to sign the Cisco Unified Communications Manager certificate.

1. If using Spectralink IP-DECT 400/6500/One, click **Configuration**, and then click **Certificates**. If using Spectralink DECT 8000, click **Installation**, and then click **Certificates**.
2. Under **CA certificates**, click **Browse** to find the relevant CA certificate file (*.pem file).
3. Click **Import List**.
4. Reboot the server.

Configuring the Spectralink IP-DECT/DECT/Virtual IP-DECT Server

SIP Settings

The Spectralink IP-DECT/DECT/Virtual 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:

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

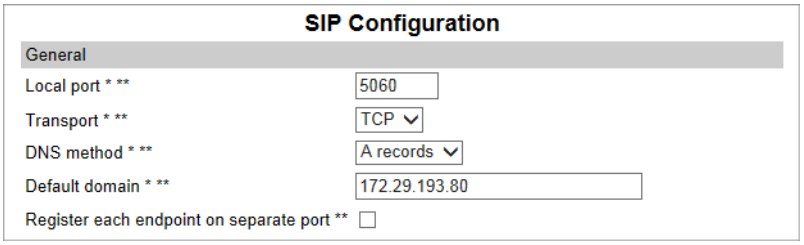
Field	Setting
SIP Configuration - General	
Transport	UDP, TCP or TLS **Note**: If not running PCS 20A_ or newer, TLS requires acquisition of additional Security (TLS, SRTP) License. **Note**: If TLS is used as SIP Transport Method, it is necessary to create an additional security profile, that must be selected as the Device Security Profile. A phone security profile allows grouping of security-related settings for a phone type and protocol that can be assigned to a device. The device will then be required to enforce those settings.
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**).
Send all messages to current registrar	Enable
Allow internal routing fallback	Must be enabled if **Secondary username** is defined. For more information, see "Adding Users and Handsets" on page 21.

Field	Setting
TCP ephemeral port in contact address	Enable
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 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.
SIP Configuration - Media	
Enable media encryption (SRTP)	Enable SRTP (encrypted RTP) support towards external SIP endpoints. **Note**: TLS/SRTP is only available on Spectralink IP-DECT/Virtual IP-DECT Servers with firmware PCS 17B or newer and Spectralink DECT Server 8000 with firmware PCS 17Da or newer. TLS/SRTP also requires installation of Host certificates and CA certificates and additional Security (TLS, SRTP) License on the Spectralink IP-DECT/DECT/Virtual IP-DECT Server (the additional license is not required if running PCS 20A_ or newer). From R1-2020 security is available without license.
Require media encryption (SRTP)	Enable **Note**: TLS/SRTP is only available on Spectralink IP-DECT/Virtual IP-DECT Servers with firmware PCS 17B or newer and Spectralink DECT Server 8000 with firmware PCS 17Da or newer. TLS/SRTP also requires installation of Host certificates and CA certificates and additional Security (TLS, SRTP) License on the Spectralink IP-DECT/DECT/Virtual IP-DECT Server (the additional license is not required if running PCS 20A_ or newer). From R1-2020 security is available without license. **Note**: Requires that SRTP must be negotiated with remote SIP endpoints.

Note:

In order for the Spectralink IP-DECT/DECT/Virtual 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.

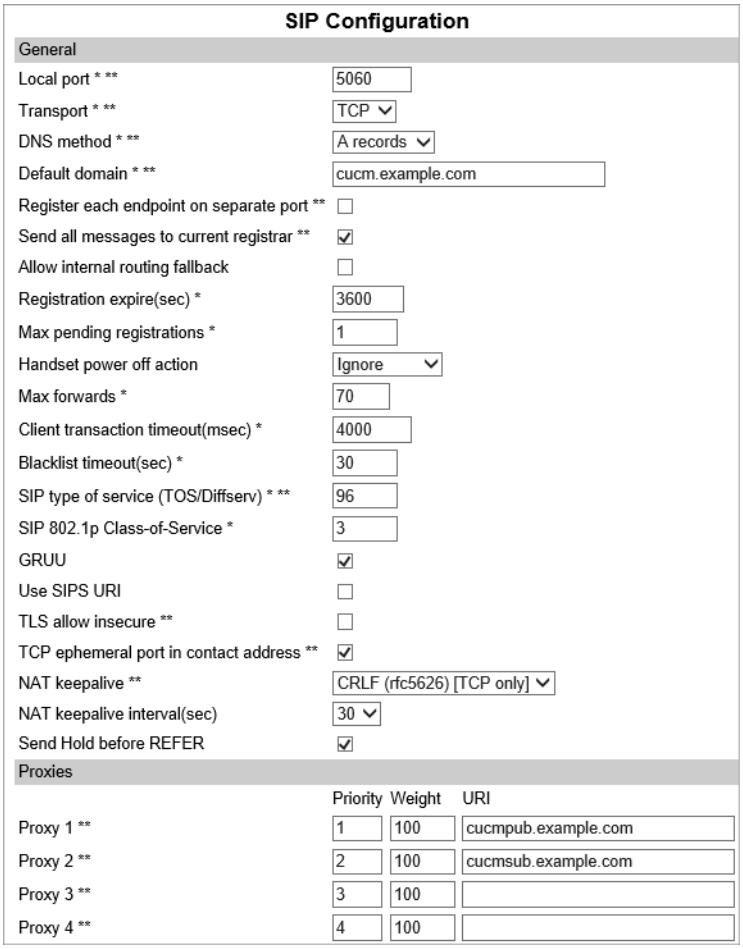
Example using a standalone CUCM configuration:



SIP Configuration

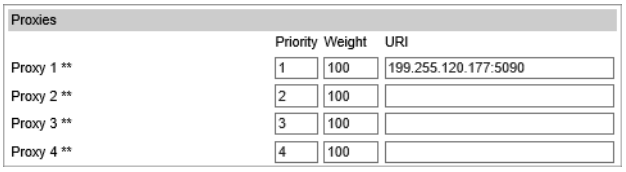
General	
Local port * **	5060
Transport * **	TCP
DNS method * **	A records
Default domain * **	172.29.193.80
Register each endpoint on separate port **	☐

Example using a CUCM cluster solution:



SIP Configuration

General			
Local port * **	5060		
Transport * **	TCP		
DNS method * **	A records		
Default domain * **	cucm.example.com		
Register each endpoint on separate port **	☐		
Send all messages to current registrar **	☑		
Allow internal routing fallback	☐		
Registration expire(sec) *	3600		
Max pending registrations *	1		
Handset power off action	Ignore		
Max forwards *	70		
Client transaction timeout(msec) *	4000		
Blacklist timeout(sec) *	30		
SIP type of service (TOS/Diffserv) * **	96		
SIP 802.1p Class-of-Service *	3		
GRUU	☑		
Use SIPS URI	☐		
TLS allow insecure **	☐		
TCP ephemeral port in contact address **	☑		
NAT keepalive **	CRLF (rfc5626) [TCP only]		
NAT keepalive interval(sec)	30		
Send Hold before REFER	☑		
Proxies			
	Priority	Weight	URI
Proxy 1 **	1	100	cucmpub.example.com
Proxy 2 **	2	100	cucmsub.example.com
Proxy 3 **	3	100	
Proxy 4 **	4	100	



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

For an example of the configuration XML file from your Spectralink IP-DECT/Virtual IP-DECT Server, see "Example of XML Configuration File" on page 44.

Enabling Feature Codes

Some advanced features are accessed by dialing special feature codes from the DECT handsets. To provide access to these advanced features, the feature codes must be enabled.

To Enable Feature Codes from the Web Based Administration Page

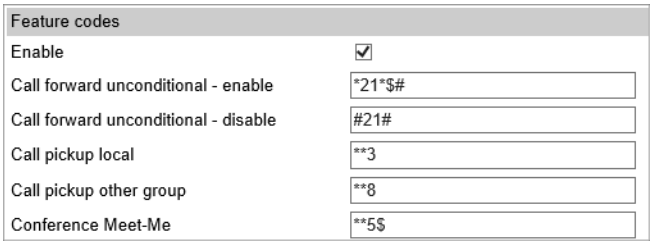
1. If using Spectralink IP-DECT 400/6500/One, click **Configuration**, and then click **Wireless Server**.

   If using Spectralink DECT 8000, click **Configuration**, and then click **DECT Server**.
2. Under **Feature codes/SIP Users Feature Codes**, do the following:

Field	
Wireless Server Configuration - Feature codes/SIP Users Feature Codes	
Enable (Optional)	Enable this to make the server react to the feature codes.
Call forward unconditional (all end-points) - enable (Optional)	Enable **Call forward unconditional** by dialing this code ***21***, followed by the desired extension ($ = extension) and **#**. E.g.: ***21*$#** **Note**: It is possible to change the code *21* on the server to fit your standard. For more information, see the relevant documentation available at http://support.spectralink.com/products .
Call forward unconditional - disable (Optional)	Disable **Call forward unconditional** by dialing this code **#21#**.
Call pickup local (Optional)	Enable **Call pickup local** by dialing this code ****3**.
Call pickup other groups (Optional)	Enable **Call pickup other groups** by dialing this code ****8**.
Conference Meet-Me (Optional)	Enable **Conference Meet-Me** by dialing this code ****5$**.

Note:

The default feature codes can be modified if relevant.


Feature codes
Enable
Call forward unconditional - enable
21$#
Call forward unconditional - disable
#21#
Call pickup local
**3
Call pickup other group
**8
Conference Meet-Me
**5$

3. Click **Save**.

Adding Users and Handsets

User data including CUCM device names must be generated for both Spectralink IP-DECT/DECT/Virtual IP-DECT Server and CUCM when adding the devices to the Cisco Unified CM.

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

The user data and CUCM devices names can be generated in different ways:

- From the web based Administration Page in the Spectralink IP-DECT/DECT/Virtual IP-DECT Server
- In a predefined user XML file in Spectralink IP-DECT/DECT/Virtual IP-DECT Server format to be provisioned into the Spectralink IP-DECT/DECT/Virtual IP-DECT Server
- In a CSV file to be imported into the Spectralink IP-DECT/DECT/Virtual IP-DECT Server

To Add Users to the Spectralink IP-DECT/DECT/Virtual 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 8000, click **Users**, click **Overview**, and then click **New**.
2. Enter the required information:

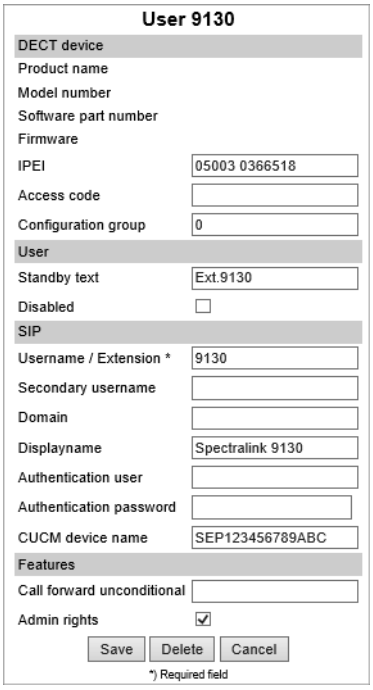
Field	Setting
Interface (only Spectralink DECT Server 8000)	
Line type	Select **SIP**.
DECT device	
IPEI (Optional)	If a specific handset is being subscribed for this extension, enter the IPEI number of the actual handset. (The IPEI number is readable from the label on the product). If this is not the 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 individual access code as extra wireless security during the subscription process.
Configuration group (Optional) (Only on Spectralink IP-DECT/Virtual IP-DECT Server)	If using handset configuration, enter the Group ID of the Configuration Group.

Field	Setting
User	
Local Number (DN) (Only Spectralink DECT Server)	The local number (DN) is required on Spectralink DECT Server 8000.
Standby text (Optional)	Standby text is a fixed label shown in the top left part of the screen on the DECT handset when in idle state. **Note**: Disallowed characters: <>\" **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.
Disabled (Optional)	If enabled, the user is disabled. **Note**: A disabled user cannot make calls from the handset .
SIP	
SIP Username (Optional) (Only on Spectralink DECT Server)	If not defined, then the SIP Username is automatically set to Local Number.
Username/Extension (Only on Spectralink IP-DECT/Virtual IP-DECT Server)	The actual directory number of the handset defined in the Cisco Unified CM. **Note**: Allowed characters: a-z, A-Z, 0-9, -_.!~*' ()&=+$,;?/ **Note**: This field must be unique within the Spectralink IP-DECT/Virtual IP-DECT Server. If simultaneous ring on two or more handsets is required, a Cisco Unified CM ring group must be set up.

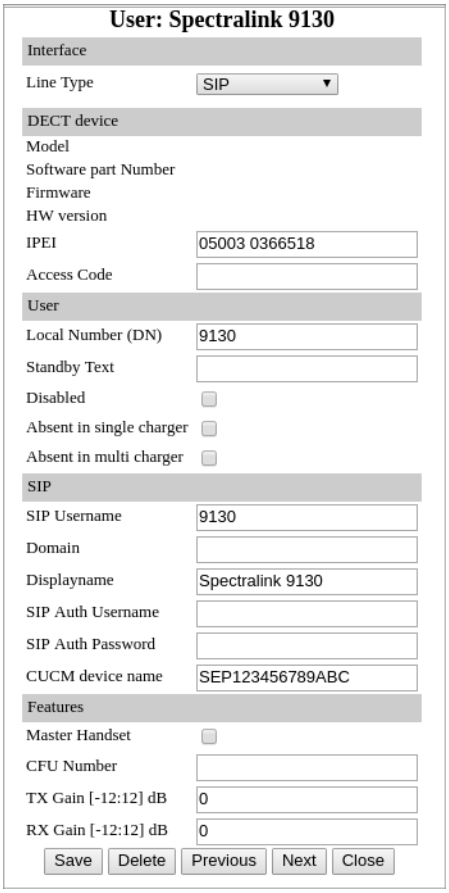
Field	Setting
Secondary username (Optional) (Only on Spectralink IP-DECT/Virtual IP-DECT Server)	If defined, the Secondary username can be used to make voice calls in case the connection to the SIP PBX is lost. The Secondary username must be globally unique. **Note**: Allowed characters: a-z, A-Z, 0-9, -_.!~*' ()&=+$,;?/ In some PBXs there is a mapping between username and number (e.g. Username = hz2539jk, Number = 1234). If the connection to the SIP PBX is lost, then it is possible to make the mapping internally by defining a Secondary username. **Note**: The feature MUST be used with SIP setting **Allow internal routing fallback** enabled. (missing or bad snippet)"SIP Settings" on page 15.
Domain (Optional)	Enter the domain part of a SIP URI. **Note**: Allowed characters: a-z, A-Z, 0-9, .- **Note**: If not configured, the default domain entered under SIP configuration will be used.
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 Spectralink IP-DECT/Virtual IP-DECT Server. **Note**: Disallowed characters: <>\"

Field	Setting
CUCM device name	If no CUCM device name is defined, then the CUCM device name will be auto-generated by the Spectralink IP-DECT/DECT/Virtual IP-DECT Server when uploaded, as it must be used as the device name when the device is added to the Cisco Unified CM. It is always possible to change the device name later either through the user XML file, the CSV file, or the web based Administration Page of the server. **Note**: Leaving this field empty, the Spectralink IP-DECT/Virtual IP-DECT Server will generate this value when the user is saved. **Note**: This information is not displayed if the Cisco Unified CM license is not loaded into the Spectralink IP-DECT/Virtual IP-DECT Server.
Features	
Call forward unconditional	A Call Forward Unconditional can be added/removed via the web based Administration Page. **Note**: Allowed characters: a-z, A-Z, 0-9, -_.!~*'()&=+$,;?/
Admin rights (Optional)	If enabled, the user becomes an admin rights user with the ability to replace a broken handset.

Example - Spectralink IP-DECT/Virtual IP-DECT Server 400/6500:



Example - Spectralink DECT Server 8000:



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

To Add Users Creating User XML File Manually for Provisioning

It is possible to create user data including CUCM device names manually in an user XML file to be used for provisioning.

The user XML file must be uploaded to a provisioning server matching provisioning URL in the configuration.

For more information, see the Provisioning Guide.

Example of User XML File Containing Predefined CUCM Device Names

For an example of a user XML file in Spectralink IP-DECT/DECT/Virtual IP-DECT Server format containing predefined CUCM device names, see below:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<users>
  <user>
    <ipei>00077 0000001</ipei>
    <standbytext>9997</standbytext>
    <username>9997</username>
    <cucmdevicename>SEP123456789ABC</cucmdevicename>
  </user>
  <user>
    <ipei>00077 0000002</ipei>
    <standbytext>9998</standbytext>
    <username>9998</username>
    <displayname>Morten Mortensen</displayname>
    <cucmdevicename>SEP123456789BCD</cucmdevicename>
  </user>
  <user>
    <ipei>00077 0000003</ipei>
    <accesscode>1234</accesscode>
    <standbytext>9999</standbytext>
    <username>9999</username>
    <displayname>Ole Olsen</displayname>
    <disabled>true</disabled>
    <cucmdevicename>SEP123456789CDE</cucmdevicename>
  </user>
</users>
```

Note:

If no CUCM device name is defined, then the CUCM device name will be auto-generated by the Spectralink IP-DECT/DECT/Virtual IP-DECT Server when uploaded, as it must be used as the device name when the device is added to the Cisco Unified CM. It is always possible to change the device name later either through the user XML file, the CSV file, or the web based Administration Page of the server.

To Add Users Creating CSV File for Import

It is possible to create user data including CUCM device names manually in a CSV file to be imported into the Spectralink IP-DECT/DECT/Virtual IP-DECT Server through the web based Administration Page.

Example of CSV File Containing Predefined CUCM Device Names

	A
1	#IPEI,access code,standbytext,username,domain,displayname,authenticate user,authenticate password,disabled,cucmdevicename
2	05003 0350612,"","9111","9111","","9111","","",0,"SEP123456789CBA"
3	05003 0551736,"","9112","9112","","9112","","",0,"SEP123456789DEF"
4	05003 0533454,"","9410","9410","","9410","","",0,"SEPBA77A4BEC091"
5	05003 0533113,"","9411","9411","","9411","","",0,"SEP123456789AAA"
6	05003 0350611,"","9412","9412","","9412","","",0,"SEP123456789BBB"
7	05003 0350610,"","9413","9413","","9413","","",0,"SEP60E9C826D228"
8	

Note:

If no CUCM device name is defined, then the CUCM device name will be auto-generated by the Spectralink IP-DECT/DECT/Virtual IP-DECT Server when uploaded, as it must be used as the device name when the device is added to the Cisco Unified CM. It is always possible to change the device name later either through the user XML file, the CSV file, or the web based Administration Page of the server.

Import CSV File Into Spectralink IP-DECT/DECT/Virtual IP-DECT Server

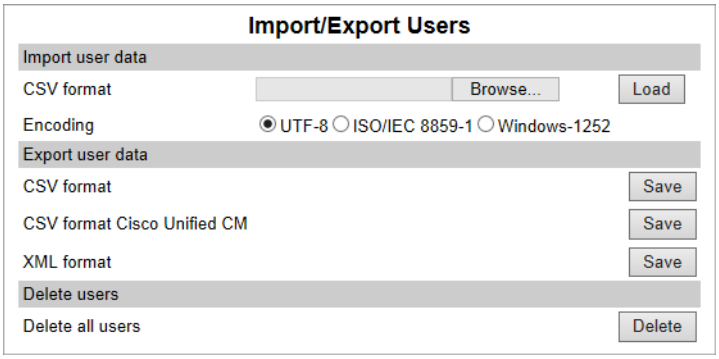
1. Click **Users**, and then click **Import/Export**.
2. Under **Import user data**, browse for the relevant CSV file, and then click **Load**.
3. After the CSV file containing user data is uploaded to the Spectralink IP-DECT/DECT/Virtual IP-DECT Server, you can export a CSV file in CUCM format to be used for Bulk Provisioning. For more information, see "Exporting CUCM Formatted CSV File for Use in CUCM/Bulk Provisioning" below.

Exporting CUCM Formatted CSV File for Use in CUCM/Bulk Provisioning

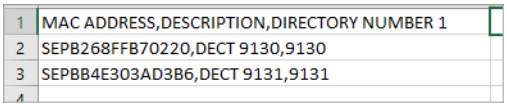
Having the CUCM License installed, the Spectralink IP-DECT/DECT/Virtual IP-DECT Server supports Cisco Unified Communications Manager's Bulk Administration of phones. From the Spectralink IP-DECT/DECT/Virtual IP-DECT Server you can export a CSV file in CUCM format that can be used directly to import new phones into the CUCM. For more information about adding user data to the Spectralink IP-DECT/DECT/Virtual IP-DECT Server, see "Adding Users and Handsets" on page 21.

To generate the CSV file in CUCM format from the web based Administration Page:

1. Click **Users**, and then click **Import/Export**.
2. Under **Export user data**, click **Save** next to **CSV format Cisco Unified CM** to download the CSV file. This file can be imported directly into the CUCM later on using the Bulk Administration Tool.



Example of a CSV file for Cisco Unified Communications Manager:



1	MAC ADDRESS,DESCRIPTION,DIRECTORY NUMBER 1
2	SEPB268FFB70220,DECT 9130,9130
3	SEPBB4E303AD3B6,DECT 9131,9131
4	

Cisco Unified Communications Manager

Below is a description of how to download and install the COP file, prepare the Cisco Unified Communications Manager, how to setup phone security profile (if using TLS), 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 device in CUCM. The Spectralink IP-DECT/DECT/Virtual IP-DECT Server itself will not be added and known to the CUCM.

Installing the COP File

A Cisco Unified Communications Manager COP file provided by Spectralink must be loaded into the CUCM in order to add support for “Spectralink IP-DECT” devices. Handsets configured as Spectralink IP-DECT will have a tighter integration with the Cisco Unified Communications Manager, and will have access to additional features.

Please note that a COP file for CUCM versions 11-12.5 cannot be used on a CUCM 14 configuration.

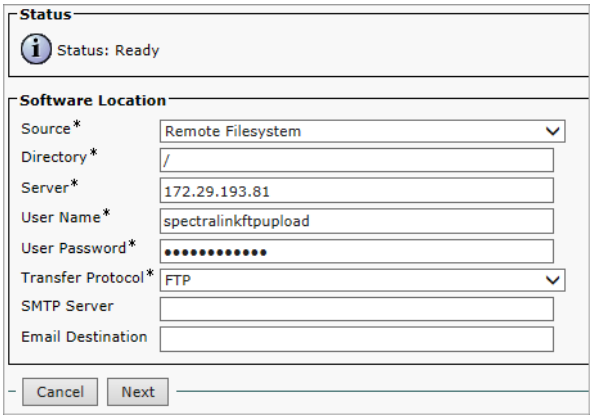
1. Download the Spectralink COP file for CUCM 14 at http://support.spectralink.com/.
2. Install the COP file in the CUCM by navigating to **Cisco Unified OS Administration** > **Software Upgrades** > **Install/Upgrade**.

   Note:

   You need a FTP/SFTP server to install the COP file.

3. On the **Software Location** page, enter the following data:

Field	Setting
Software Location	
Source	Select **Remote Filesystem**.
Directory	Enter the path on the SFTP or FTP server.
Server	Enter the hostname or IP address of the SFTP or FTP server.
Username	Enter User name to login to the SFTP or FTP server.
Password	Enter Password to login to the SFTP or FTP server
Transfer Protocol	Select **SFTP** or **FTP**.



4. When the data has been entered, click **Next**.

   The CUCM now contacts the FTP/SFTP server and look for update files.

5. When the update files are listed, select the COP (.cop.sgn) file, and click **Next**.

   The CUCM downloads the COP file.

   When the COP file is downloaded, the CUCM displays the file checksum details.

6. Check that everything looks correct, and click **Next**.

   The CUCM will start installing the COP file. The installation will take a while.

7. When the installation of the COP file is successfully completed, restart the **CM TFTP Service** to make sure that the changes take effect.

   Navigate to **Cisco Unified Serviceability** * > **Tools** > **Control Center - Feature Services** > **Select Publicher IP Address** > **Cisco Tftp**.

Note:

If the COP file has been successfully installed, then a DECT handset icon appears when adding handsets to the CUCM Database. If you have restarted the CM TFTP without the DECT handset icon appearing, you need to restart the Cisco Unified Communications Manager as well.

Setting up Phone Security Profile (if Using TLS)

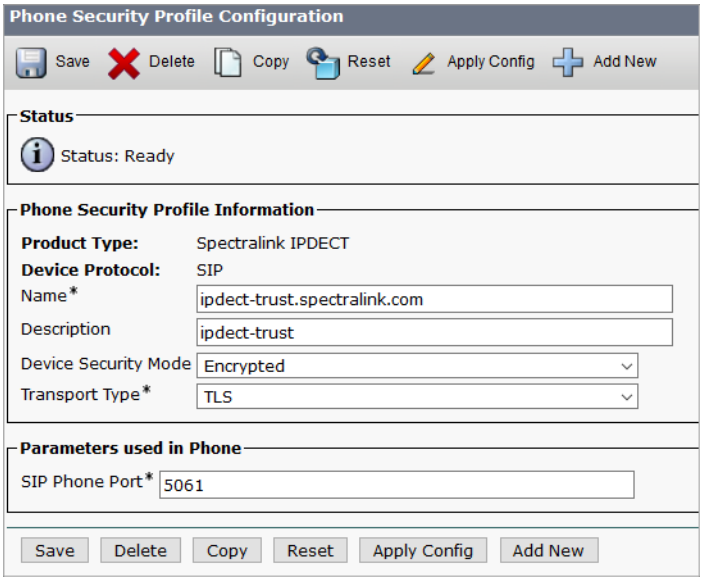
This section describes how to build a unique Phone Security Profile for the Spectralink IP-DECT/DECT/Virtual IP-DECT Server .

If TLS is used as SIP Transport Method, it is necessary to create an additional security profile, that must be selected as the Device Security Profile.

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 **Spectralink IPDECT**, and then click **Next**.

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

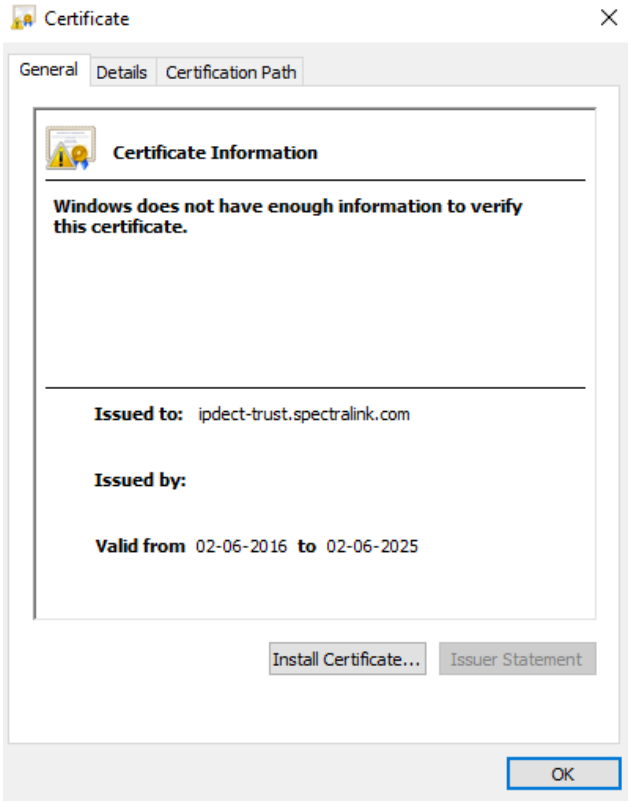
Field	Setting
Device Protocol	
Name	Enter the relevant name. E.g. **ipdect-trust.spectralink.com** Note: The name of the security profile must match SAN (SubjectAltName) of the device certificate (the host certificate offered to CUCM). For more information, see "Example of Security Profile Name" on the next page.
Description	Enter description. E.g. **ipdect-trust**
Device Security Mode	Select **Encrypted**.
Transport Type	Select **TLS**.

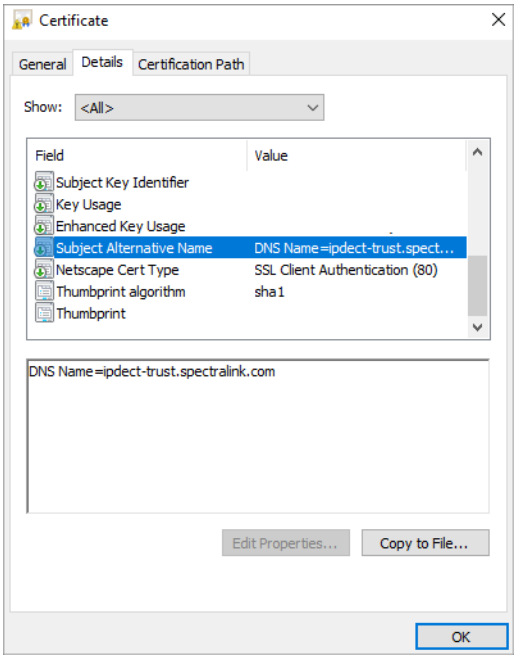


5. Click **Save**.

Example of Security Profile Name

The installed device certificate on Spectralink IP-DECT/Virtual IP-DECT Server is issued to: ipdect-trust.spectralink.com





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 device name, which can be generated by the Spectralink IP-DECT/DECT/Virtual IP-DECT Server, defined through the web based Administration Page of the server, predefined manually in an XML file or CSV file. This device name can be compared to the MAC address, which identifies the Cisco IP Phones. The device name of a specific DECT handset can be viewed by editing the user in the Spectralink IP-DECT/DECT/Virtual IP-DECT Server, XML file or CSV file.

Note:

If no CUCM device name is defined, then the CUCM device name will be auto-generated by the Spectralink IP-DECT/DECT/Virtual IP-DECT Server when uploaded, as it must be used as the device name when the device is added to the Cisco Unified CM. It is always possible to change the device name later either through the user XML file, the CSV file, or the web based Administration Page of the server.

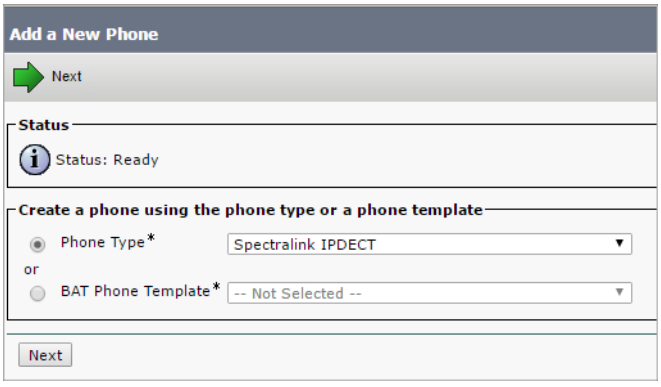
Two different methods for adding handsets are supported:

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

Manual Handset Creation in CUCM

To Add Handsets Manually

1. Navigate to **Cisco Unified CM Administration** > **Device** > **Phone**.
2. Click **Add new**.
3. In the **Phone Type** list, select **Spectralink IPDECT**, and then click **Next**.

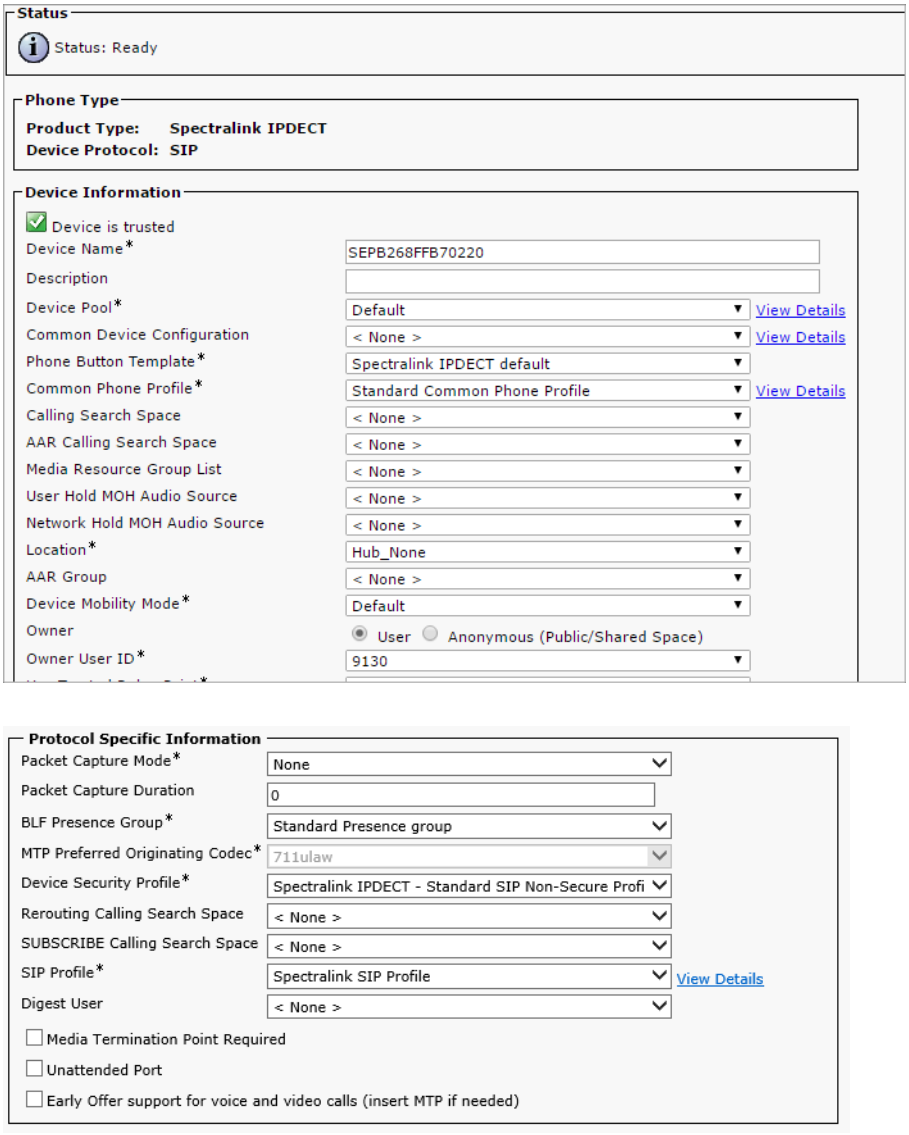


Note:

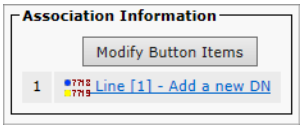
If **Spectralink IPDECT** is not available from the list, please make sure that the COP file is installed correctly and that the CUCM has been restarted afterwards.

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

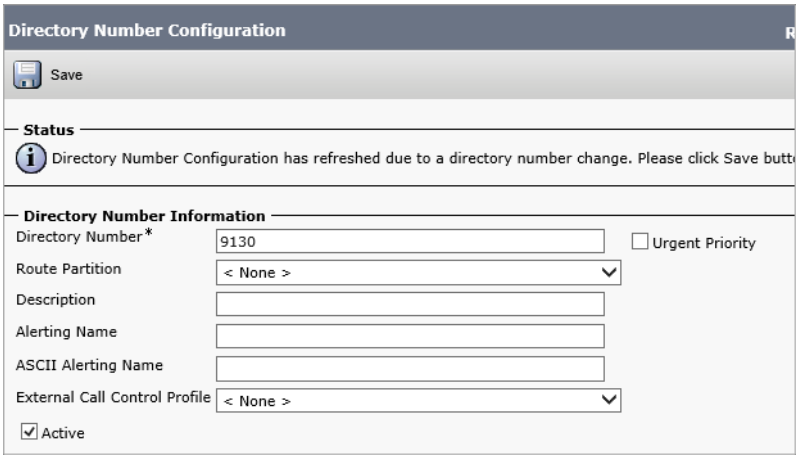
Field	Setting
Device Information	
Device Name	Enter (copy and paste) the device name from the user on the Spectralink IP-DECT/DECT/Virtual IP-DECT Server into the Device Name field.
Device Pool	Select the relevant device pool.
Phone Button Template	Select phone button template.
Owner User ID	Select the relevant Owner User ID.
Protocol Specific Information	
Device Security Profile	Select Spectralink IPDECT – Standard SIP Non-Secure Profile or TLS profile/ipdect-trust profile. **Note**: The TLS Phone Security Profile is only available if created, and if using Spectralink IP-DECT/Virtual IP-DECT Server .
SIP Profile	Select the relevant SIP Profile. **Important**: If having 0 - 150 users on the system, you can use the Standard SIP Profile. If having more that 150 users on the system, then the field **Timer Keep Alive Expires** in the SIP profile must be set to 900 seconds (default 120 seconds). It is recommended to take a copy of the Standard SIP Profile, rename it (e.g. Spectralink SIP Profile) and change the **Timer Keep Alive Expires** field value to 900 seconds. For more information, see Cisco documentation.



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.



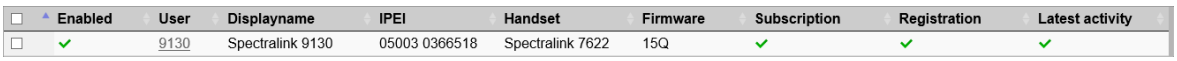
Note:

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

8. Click **Save** and 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:



Note:

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

Automated End User/Handset Provisioning

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.

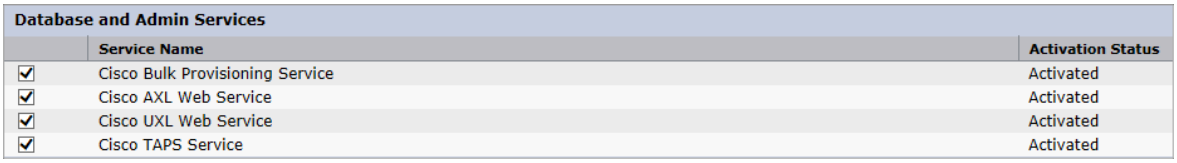
The process of bulk provisioning handsets using the Bulk Administration Tool consists of the following three tasks:

- Ensure activation of the bulk provisioning service
- Creation of templates for inserting the handsets
- Import of CSV file containing the user data and CUCM device name using the Bulk Administration Tool.

  For more information about exporting the CSV file from the Spectralink IP-DECT/DECT/Virtual IP-DECT Server, see "Exporting CUCM Formatted CSV File for Use in CUCM/Bulk Provisioning" on page 28.

To Check Activation of Bulk Provisioning Service

- Check that the “Cisco Bulk Provisioning Service” is active by navigating to **Cisco Unified Serviceability** > **Tools** > **Service Activation**.



To Create Templates

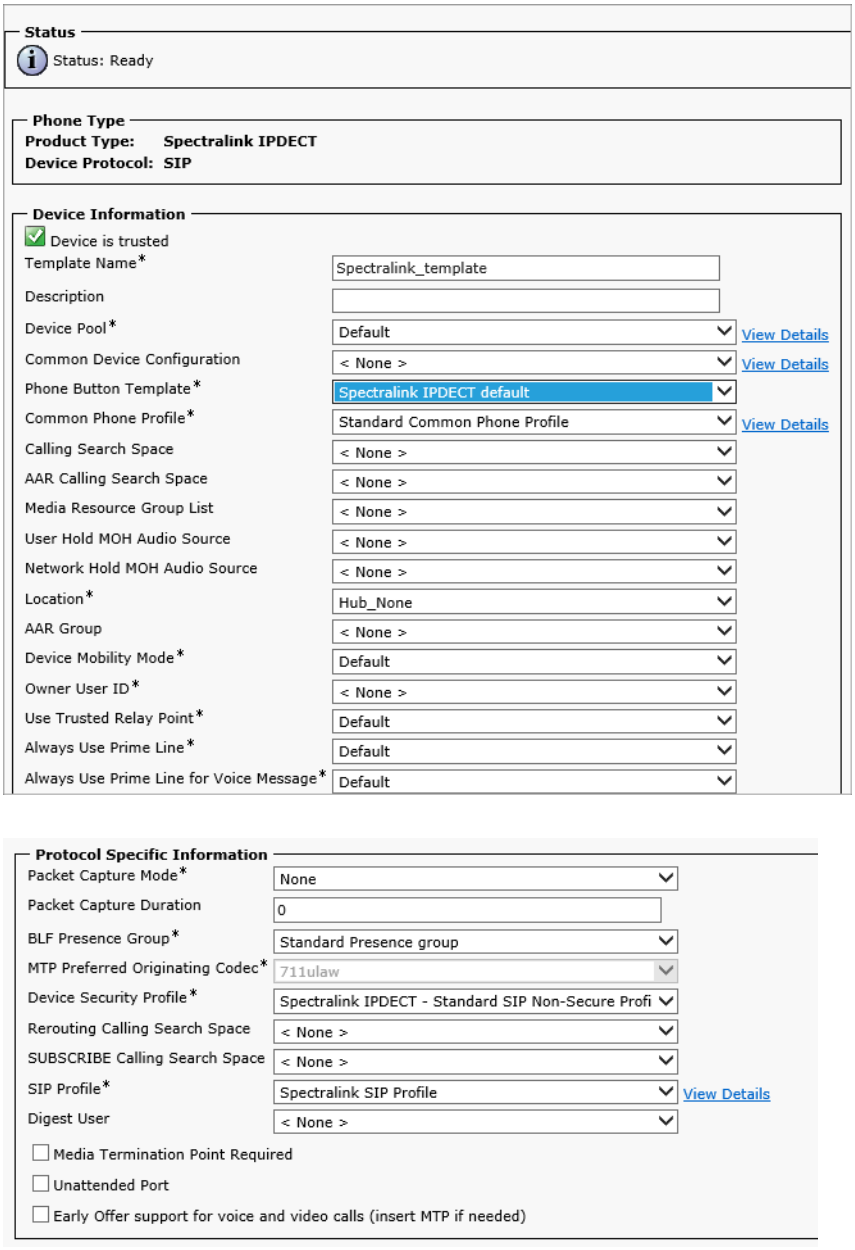
It is necessary to create a phone template containing a line template. These templates define the default values for the handsets that will be inserted.

In Order to Define a Phone Template

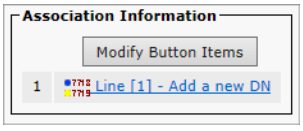
1. Navigate to **Cisco Unified CM Administration** > **Bulk Administration** > **Phones** > **Phone template**.
2. Click **Add New**.
3. In the **Phone Type** list, select **Spectralink IPDECT**, and click **Next**.
4. On the **Phone Template Configuration** page, enter the required parameters:

Field	Setting
Device Information	
Template Name	Enter a name for the template.
Device Pool	Select **Default**.

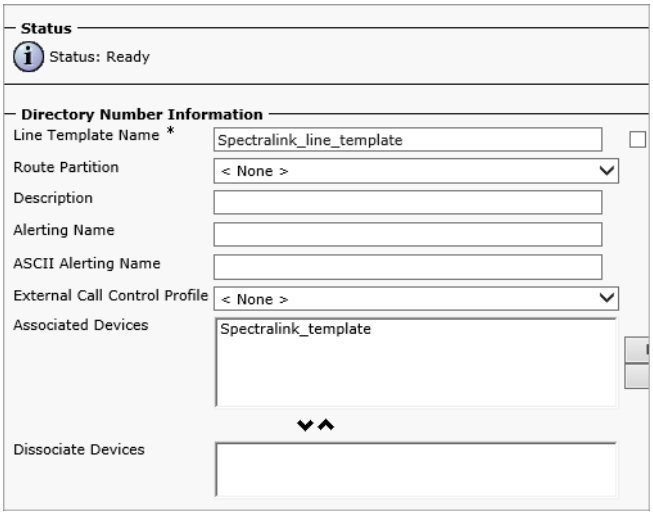
Field	Setting
Phone Button Template	Select **Spectralink IPDECT default**.
Common Phone Profile	Select **Standard Common Phone Profile**.
Protocol Specific Information	
Device Security Profile	Select **Spectralink IPDECT – Standard SIP Non-Secure Profile** or **TLS profile/ipdect-trust profile**. **Note**: The **TLS Phone Security Profile** is only available if created.
SIP Profile	Select the relevant SIP Profile. **Important**: If having 0 - 150 users on the system, you can use the Standard SIP Profile. If having more that 150 users on the system, then the field **Timer Keep Alive Expires** in the SIP profile must be set to 900 seconds (default 120 seconds). It is recommended to take a copy of the Standard SIP Profile, rename it (e.g. Spectralink SIP Profile) and change the **Timer Keep Alive Expires** field value to 900 seconds. For more information, see Cisco documentation.



5. Click **Save**, and then click **OK** to apply the configuration.
6. In the appearing **Association Information**, click **Add a new DN** to add a line template to the device template.



7. In the **Line Template Name** field, enter a template name.



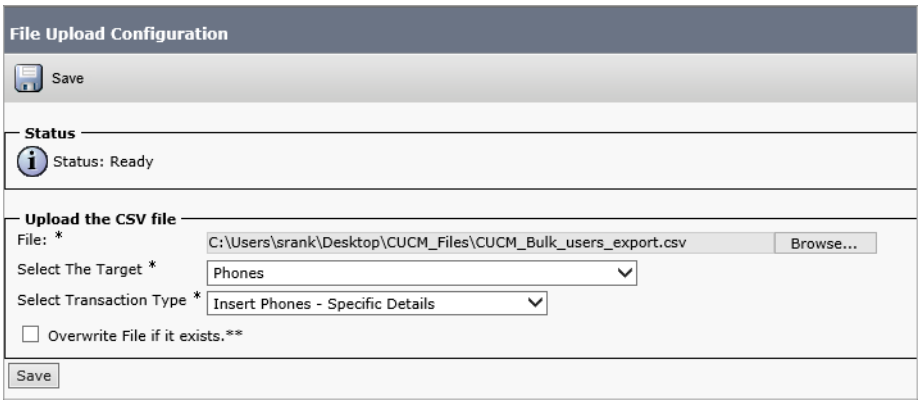
8. In the **Associated Devices** field, make sure that the phone template appears as an associated device, and then click **Save**.

To Import a CSV File

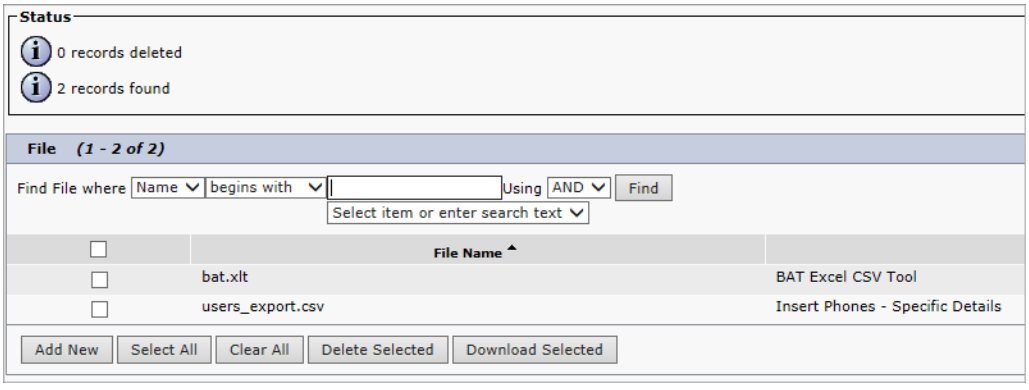
Import the CSV file (previously exported from the Spectralink IP-DECT/DECT/Virtual IP-DECT Server) using the phone template defined.

1. Upload the CSV file to CUCM by navigating to **Cisco Unified CM Administration** > **Bulk Administration** > **Upload/Download Files**.
2. Click **Add New**.
3. On the **File Upload Configuration** page, enter the relevant data:

Field	Setting
Upload the CSV file	
File	Browse to the CSV file on the computer.
Select the Target	Select Phones.
Select Transaction Type	Select Insert Phones – Specific Details.



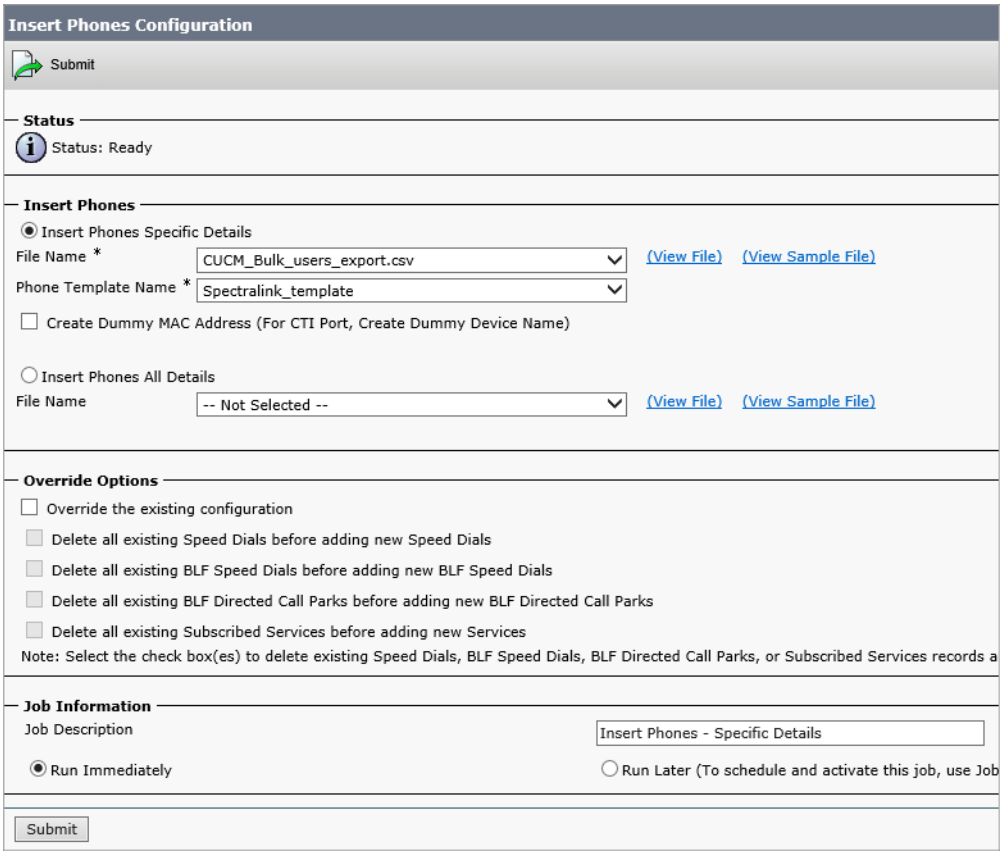
4. Click **Save**. The file will be uploaded to CUCM. Check that the uploaded file is available in the list.



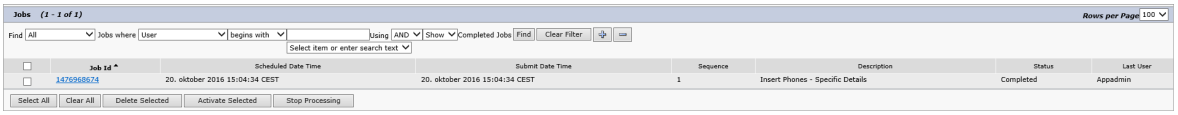
5. When the CSV file is uploaded, then the CUCM handsets can be inserted into the CUCM by navigating to **Cisco Unified CM Administration** > **Bulk Administration** > **Phones** > **Insert Phones**.

6. On the **Insert Phones Configuration** page, enter the following data:

Field	Setting
Insert Phones	
Insert Phones Specific Details	Select this.
File Name	Select the file name uploaded in the previous step.
Phone Template Name	Select the phone template that was created for the DECT handsets.
Job Information	
Run Immediately	Select this.



7. Click **Submit** to start the job and insert the phones. The result of the job can be viewed by navigating to **Cisco Unified CM Administration** > **Bulk Administration** > **Job Scheduler**.



8. Click on the relevant job to check that the job has been completed successfully.

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*$#</enable>
			</unconditional>
		</call_forward>
		<conference>
			<meetme>**5$</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>
```

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        <ptp>
                <transport>l2</transport>
        </ptp>
</rfp>
<security>
        <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>
                <rtp_payload_type>101</rtp_payload_type>
        </dtmf>
        <gruu>true</gruu>
        <localport>5060</localport>
        <maxforwards>70</maxforwards>
        <media>
                <codecs>64,1,2,0,0,0</codecs>
                <ice>
                        <enable>false</enable>
                </ice>
                <port>58000</port>
                <ptime>20</ptime>
                <sdp_answer_single>false</sdp_answer_single>
                <sdp_answer_with_preferred>false</sdp_answer_with_preferred>
                <sdp_ignore_version>false</sdp_ignore_version>

                <srtp> (*if using TLS)
                        <enable>true</enable>
                        <lifetime>false</lifetime>
                        <mki>false</mki>
                        <required>false</required>
                </srtp>

                <tos>184</tos>
                <turn>
                        <enable>false</enable>
                </turn>
                <vlan_cos>5</vlan_cos>
        </media>
        <music_on_hold>false</music_on_hold>
        <mwi>
                <enable>true</enable>
                <expire>3600</expire>
                <subscribe>false</subscribe>
        </mwi>
        <onholdtone>true</onholdtone>
        <pound_dials_overlap>false</pound_dials_overlap>
        <proxy>
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                <port2>0</port2>
                <port3>0</port3>
```

```
                        <port4>0</port4>
                        <priority>1</priority>
                        <priority2>2</priority2>
                        <priority3>3</priority3>
                        <priority4>4</priority4>
                        <weight>100</weight>
                        <weight2>100</weight2>
                        <weight3>100</weight3>
                        <weight4>100</weight4>
                </proxy>
                <registration_expire>3600</registration_expire>
                <send_to_current_registrar>true</send_to_current_registrar>
                <separate_endpoint_ports>false</separate_endpoint_ports>
                <showstatustext>true</showstatustext>
                <tcp_contact_ephemeral_port>true</tcp_contact_ephemeral_port>
                <tls_allow_insecure>false</tls_allow_insecure>
                <tos>96</tos>
                <transport>tcp</transport>
                <use_sips_uri>false</use_sips_uri>
                <vlan_cos>3</vlan_cos>
        </sip>
        <snmp>
                <community>public</community>
                <enable>false</enable>
        </snmp>
        <upnp>
                <broadcast>false</broadcast>
                <enable>true</enable>
        </upnp>
</config>
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