

APPLICATION NOTE

How to use Barix SIP Client with Cisco Unified Call Manager

About this document

This document explains how to make a Barix Device with SIP-Client-Firmware (Version 2.12 or higher) registering and working with the Cisco Unified Call Manager (CUCM). It was tested with CUCM V8.6.2.

(Original version from 2013-07-11)

Update at 2015-09-22:

The new feature “Authentication ID” introduced with SIP-Client version 2.14 and how to use it with CUCM is explained in the updated version of this document.

1. Barix Device Preparation

1.1. Installation

Install the Barix device according to its Quick Install Guide so that you can connect to the web user interface.

1.2. Firmware check/load

Check if the correct application is loaded by clicking the STATUS button in the top menu line. In the third paragraph you should see the following information:

BCL application:

Name: sip

Version: V2.12 (26 Apr 2012)

If your version is not at least 2.12 then download the SIP client package from the Barix website and load it into the device. (See readme.txt in the package for further information.)

1.3. Device Configuration Basic Settings

- In the WebUI click the CONFIGURATION button in the top menu line. (Image)

The screenshot shows the 'SIP CLIENT' configuration page in a Firefox browser. The top navigation bar includes 'HOME', 'PROFILES', 'CONFIGURATION', 'STATUS', 'DEFAULTS', 'UPDATE', and 'REBOOT'. The 'CONFIGURATION' page is titled 'SIP CLIENT' and features the 'BARIX THE VOICE OF SIMPLICITY' logo. The page is divided into 'BASIC SETTINGS' and 'SIP PROTOCOL SETTINGS'. Under 'SIP PROTOCOL SETTINGS', the 'Peer to Peer' field is set to 'No'. The 'SIP Server (PBX)' field contains '10.0.0.3', the 'SIP ID (username)' field contains '9124', and the 'SIP Password (secret)' field is masked with '****'. Under 'OUTBOUND CALL SETTINGS', the 'Call on Device Inputs' section has 'Input 0 Call ID' set to '9226'. Under 'INBOUND CALLS', the 'Phone pickup mode' is set to 'autohang up after timeout' and the 'Pick/hang up time' is set to '20 seconds'. A 'Help' sidebar on the right provides details for 'SIP PROTOCOL', 'SIP Server (PBX)', 'SIP ID', and 'SIP Password'.

- In the "Peer to Peer" field select "No"
- In the "SIP Server (PBX)" field enter the IP-address of the Call Manager (e.g. 10.0.0.3)

- In the "SIP ID (username)" field enter the planned extension number of the device (e.g. 9123) *
- In the "SIP Password (secret)" field enter the planned password (e.g. Pass123) of the End-User
- In the "Input 0 Call ID" field enter the extension number (e.g. 9226) to be called when input 0 is closed (PS1: Button B is pressed). **
- Click "Apply" to save the settings.

* Later on when configuring the Call Manager you are going to use this extension number for both the "End User" as well as "Directory Number".

** For further inputs/buttons see paragraph "Advanced Settings/Outbound Calls" below.

1.4. Device Configuration Advanced Settings

a) Using "Authentication ID" * (with Barix SIP-Client v2.14 or higher)

Since SIP-client v2.14 there is a new feature. Now it is possible to authenticate or to register at the server with an alphanumeric ID instead of the extension number.*

If you want to register with your extension number, you can jump right down to the next section .

- Click the "Advanced Settings" and then the "SIP Protocol" button in the left menu column
- Put into the field "Authentication ID" the name you want to authenticate (e.g. Ann200_9235)

* When the "Authentication ID" is used, first the device tries to register with the extension. The server rejects this attempt and challenges the device. With the second try the device uses the specified "Authentication ID" to login and gets this time the "OK" from the server.

b) Configuring more inputs/buttons

These settings are optional and only needed if the Barix device used features more than one input or button.

If not, you can jump right down to the next section.

- Click the "Advanced Settings" button in the left menu column
- Click the "Outbound Calls" button in the left menu column
- If you need to configure further inputs/buttons enter the extension numbers accordingly (e.g. 9719)
- Click "Apply" to save the settings.

c) **Configuring Door Open Code**

These settings are optional and only needed if the Barix device used features a relay output wired to a door opener.

If not, you can jump right down to the next section.

- . Click the "Advanced Settings" button in the left menu column
- . Click the "Inbound Calls" button in the left menu column
- . Enter code numbers in the "Door Open Code" field (e.g. 123)
- . Click "Apply" to save the settings.

NOTE: This code is triggered from the remote phone supporting DTMF via SIP-Info or RTP-payload. DTMF are passed through the Cisco Unified Call Manager without requiring special settings on the server.

2. Registration in Cisco Unified Call Manager

Log in to the CM Administration web interface.

a) **Creating your extension number (called "Directory Number" (DN) in CUCM)**

- . Under "Call Routing" > "Directory Number" click "Add New".
- . In the field "Directory Number" type in your extension number (e.g. 9123) as configured in the device.
- . Put it into the same "Route Partition" as your other devices.
- . Click "Save"

b) **Creating your user (called "End User" in CUCM)**

If you used the new feature 'Authentication ID', provided by SIP-client v2.14 or higher, use the second possibility (marked with "using 'Auth. ID'" in the following text. Otherwise ignore the digest settings).

- . Under "User Management" > "End User" click "Add New".
- . For the "User ID" type in your extension number (e.g. 9123) as configured in the device. (Image: CUCM Add new user) **OR**
 - . **using 'Auth. ID'**: put in the "User ID" the same name, that you have used in the field "Authentication ID" at the webUI of the Barix device (e.g. Ann200_9235)
- . Enter the same password as configured in the device (e.g. Pass123) and retype it in the confirmation field.

- only fill in, when **using 'Auth. ID'**: put into "Digest Credentials" and "Confirm Digest Credentials" the same password as configured in the device (e.g. Pass123)
- Click "Save"

The screenshot shows the Cisco Unified CM Administration interface for 'End User Configuration'. The page title is 'End User Configuration' and it includes a 'Related Links' section with 'Back to Find List Users'. The 'Status' section shows 'Update successful'. The 'User Information' section contains the following fields:

- User ID*: Ann200_9235
- Password: [Redacted]
- Confirm Password: [Redacted]
- PIN: [Redacted]
- Confirm PIN: [Redacted]
- Last name*: Ann200_9235
- Middle name: [Empty]
- First name: [Empty]
- Telephone Number: [Empty]
- Mail ID: [Empty]
- Manager User ID: [Empty]
- Department: [Empty]
- User Locale: < None >
- Associated PC: [Empty]
- Digest Credentials: [Redacted]
- Confirm Digest Credentials: [Redacted]

c) Adding "End User" to the permission group

- Go down on the just saved "End User" page to "Permissions Information".
- Click "Add to The User Group". A popup window opens.
- Click "Find" and choose "Standard CCM End Users" and click "Add Selected".
- Click "Save"

d) Creating your device at the server

- Under "Device" > "Phones" click the "Add new" button
- Choose within the "Phone Type" list "Third Party SIP Device (Basic)"
- Click "Next"
- Look up the MAC-address of your Barix device. (It is written at a sticker on your device; for example: MAC: 00-08-E1-02-8B-EE)
- Type in only the numbers and letters from this label to the field "MAC Address"; (e.g. 0008E1028BEE)

- In "Phone Button Template" select "Third-party SIP Device (Basic)".
- In "SIP Profile" select the "Standard SIP Profile".
- In the section "Protocol Specific Information" at "Device Security Profile" choose "Third Party Device SIP Basic - Standard SIP Non-Secure Profile". (Image)

The screenshot shows the Cisco Unified CM Administration interface. The main heading is "Phone Configuration". Below it, there is a "Save" button. The "Protocol Specific Information" section is expanded, showing the following fields:

- Presence Group*: Standard Presence group
- MTP Preferred Originating Codec*: 711ulaw
- Device Security Profile*: Third-party SIP Device Basic - Standard SIP Non-S
- Rerouting Calling Search Space: < None >
- SUBSCRIBE Calling Search Space: < None >
- SIP Profile*: < None >
- Digest User: 9123

Below these fields, there are three checkboxes:

- Media Termination Point Required
- Unattended Port
- Require DTMF Reception

At the bottom left, there is a section for "MLPP Information".

- In the same section tick the box "Media Termination Point Required" *
- Under "Digest User" set it to your "End User" created before (e.g. 9123).
- Click "Save"
- Click "Apply Config"

* This setting forces the server to provide the SDP (Session Description Protocol) in the first INVITE (early offer) as required by the Barix device. In this case the audio is always routed via the server.

e) **Associating your device with your extension and user**

- In the left corner of the just saved page appears a canvas "Associate Information". (See screen shot below) Click the link inside "Line [1] - Add a new DN"

Cisco Unified CM Administration
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CM Administration Go

app | Search Documentation | About | Logout

System | Call Routing | Media Resources | Advanced Features | Device | Application | User Management | Bulk Administration | Help

Phone Configuration Related Links: Back To Find/List Go

Save Delete Copy Reset Apply Config Add New

Status
Status: Ready

Association Information
Modify Button Items
1 Line [1] - Add a new DN

Phone Type
Product Type: Third-party SIP Device (Basic)
Device Protocol: SIP

Device Information

Registration	Rejected
IP Address	10.0.0.30
Active Load ID	Unknown
<input checked="" type="checkbox"/> Device is Active	
<input type="checkbox"/> Device is not trusted	
MAC Address*	0008E1029FA7

- In the field "Directory Number" type in your extension number (e.g. 9123) and go to the next field with the 'Tab'-key of your keyboard.
- The server recognizes the existing number and the data of your extension are going to appear.
- At the end of the page click the button "Associate End Users". A pop-up window appears.

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Directory Number Configuration Related Links: Configure Device (SEP0008E1029FA7) Go

Save Delete Copy Reset Apply Config Add New

Dial Number

Users Associated with Line
Associate End Users

Save Delete Reset Apply Config Add New

Legend:
 * - indicates required item.
 ** - Changes to Line or Directory Number settings require restart.

- Click "Find"
- Make a tick to your created user (e.g. 9123 or Ann200_9235).
- Click "Add Selected"
- Click "Close"
- At the end of the page you can check, if your user is associated all right.
- Click "Save"

Now the Barix device should register with the CUCM. It takes a few seconds (up to 120) until the registration is done.

f) Checking the registration

Checking is possible:

- at the WebUI of the Barix device: If the device is registered, at HOME in the line "Time till next Registration" the registration status will be shown in green.
- At CUCM you can see the "Status" under "Device" > "Phone" clicking "Find". (For example it is: "Registered with 10.0.0.3".)