

Configuring the SPA112 ATA to operate with the CUCM

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Scenario:

You have a Cisco Unified Communications Manager (CUCM) system and want to configure a SPA112 analog telephone adaptor (ATA) to register to the CUCM so that you can use up to two analog phones or similar FXS devices with the CUCM.

Overview:

In this application note, I have a Cisco Business Edition 6000 (informally also known as the BE6000 or BE6k). My BE6000 is running CUCM 9.0.1.10000-37.

I have a SPA112 ATA running 1.3.1(003) firmware and an analog phone connected to the PHONE 1 port of the SPA112.

- 1. The CUCM has a 4-digit internal dial plan starting with 1.
- 2. The CUCM is already configured and has other users and phones configured and able to make calls with each other.
- 3. The SPA112 ATA is starting from a factory defaulted state.

Configuring the CUCM

Configuring the CUCM is a discipline unto itself. This is why folk work so hard at acquiring their CCIE Voice certification. This application note does not address important topics such as security and optimal configuration which are mandatory for live deployment.

These instructions must be considered to be for internal and secure lab-use proof-of-concept only.

Overview

The following CUCM administration tasks to prepare the CUCM for connecting a SPA112 are described in detail:

- 1. Define a CUCM user that will be associated with the SPA112 Line1
- 2. Define a third-party SIP phone for the SPA112 Line1
- 3. Associate a Line / DN (directory number) to the previously defined SPA112 Line1 third-party SIP device
- 4. Associate the SPA112 Line1 user with the SPA112 Line1 third-party SIP device.

Detailed Instructions

- 1. In this subtask, you define a user called 1022 to associate with Line1 of the SPA112. The 1022 user name is configured with a password of 1234, a PIN of 1234, and Digest Credentials of 1234
 - a. Navigate to User Management > End User > Add New and complete the form appropriately based on your CUCM deployment:

| .1 | hili. |
|----|-------|
| C | ISCO |

| սիսիս Cisco Ur Cisco For Cisco Ur | nified CM Administration | adr |
|--------------------------------------|--|--|
| System - Call Routing - I | Media Resources ▼ Advanced Features ▼ Device ▼ Application ▼ | User Management 👻 Bulk Administration 👻 Help 👻 |
| End User Configuration | | |
| 🔚 Save 🗙 Delete 🚽 | Add New | |
| – Status – | | |
| i Status: Ready | | |
| User Information —— | | |
| User Status | Active Local User | |
| User ID* | 1022 | |
| Password | ••••• | Edit Credential |
| Confirm Password | •••••• | |
| PIN | ••••• | Edit Credential |
| Confirm PIN | | |
| Last name * | spa112 Line1 | |
| Middle name | | |
| First name | spa112 Line1 | |
| Directory URI | | |
| Telephone Number | 1022 | |
| Mail ID | | |
| Manager User ID | | |
| Department | | |
| User Locale | English, United States | |
| Associated PC | | |
| Digest Credentials | | |
| Confirm Digest Credential | ls | |
| -Service Settings | | |
| Home Cluster | Jnified CM IM and Presence (Configure IM and Presence in the as | sociated UC Service Profile) |
| UC Service Profile | Use Default | ails |
| -Device Information | | |
| Controlled Devices | SEPCCEF485C0E9B | · |
| | | Device Association |
| | | Line Appearance Association for P |
| Available Profiles | 1001-EM 1002-EM 1003-EM | |
| | دار المحمد به بالدين المالي المحمد الله المحمد المحمد المحمد المالية على المحمد بعال معاملات بالمحمد بالمحمد ا | |

| | ★★ |
|-----------------------------------|----------------------------|
| CTI Controlled Device Profiles | * |
| Extension Mobility | |
| Available Profiles 1 1 1 | 001-EM 002-EM 003-EM |
| | ** |
| Controlled Profiles | |
| Default Profile | - Not Selected |
| BLF Presence Group* | Standard Presence group |
| SUBSCRIBE Calling Search Space | None > |
| Allow Control of Device from CTI | |
| Enable Extension Mobility Cross (| Cluster |
| -Directory Number Associations- | |
| Primary Extension < None > | |
| Mobility Information | |
| 🗖 Enable Mobility | |
| Primary User Device | < None > |
| 🔲 Enable Mobile Voice Access | |
| Maximum Wait Time for Desk Pickup | * 10000 |
| Remote Destination Limit* | 4 |
| Remote Destination Profiles | * |
| | T View Details |
| -Mutilevel Precedence and Preem | ption Authorization |
| MLPP User Identification Number | |
| MLPP Password | |

| MLPP Password | مركز كمانيا برغام والانتزام وكالترام وكالمراجع | | منجل برين من حديثر علام بري | an a |
|-------------------------------------|--|---------------------|-----------------------------|--|
| Confirm MLPP Password | | | | |
| MLPP Precedence Authorization Level | Routine | | • | |
| CAPF Information | | | | |
| Associated CAPF Profiles | | * | | |
| | | | | |
| | | - | View Details | |
| \$. | | | 1 view becaus | |
| Permissions Information | | 1 | | |
| Groups | * | _ | | |
| | | A | dd to Access Lor | ntrol Group |
| | - | View Details | eniove from Acc | ess control droup |
| Roles | * | 1 | | |
| | | | | |
| | | 0.00 88 8.0257 | | |
| | Ŧ | <u>View Details</u> | | |
| Save Delete Add New - | | | | |
| | | | | ومنور والمقافة فمحاد ومنوره وهفهم ومرجا فاره فتراه |

- b. Click Save
- 2. In this subtask, you will configure a basic third-party SIP device for Line1 of the SPA112 ATA as follows:
 - Navigate to Device > Phone > Add New > Phone Type > Third-party SIP Device (Basic) > Next
 - b. Insert the necessary device information appropriately based on your CUCM deployment:



| Device Information | | | |
|--|--|------------|-----------------------------|
| Registration IP Address Active Load ID | Registered with Cisco Unified Communicati 10.99.31.132 Unknown | ons Manage | r 10.99.31.140 |
| Download Status | Unknown | | |
| Device is Active | | | |
| 🗥 Device is not trusted | | | |
| MAC Address* | CCEF485C0E9B | | |
| Description | CCEF485C0E9B spa112 line1 | | |
| Device Pool* | PM_HQ_DP | | View Details |
| Common Device Configuration | < None > | े.च | View Details |
| Phone Button Template* | Third-party SIP Device (Basic) | • | |
| Common Phone Profile* | Standard Common Phone Profile | • | |
| Calling Search Space | PM_HQ_DEVICE_CSS | ÷ | |
| AAR Calling Search Space | < None > | + | |
| Media Resource Group List | < None > | + | |
| Location * | PM_HQ_LOC | + | |
| AAR Group | < None > | + | |
| Device Mobility Mode* | Off | | View Current Device Mobilit |
| | Settings | | |
| Owner User ID | < None > | 1. | |
| Use Trusted Relay Point* | Default | . | |
| Always Use Prime Line* | Default | • | |
| Always Use Prime Line for Voice Message* | Default | Ť | |
| Geolocation | < None > | • | |
| 🔲 Ignore Presentation Indicators (i | nternal calls only) | | |
| 🗹 Logged Into Hunt Group | | | |
| Remote Device | | | |



| _ Inbound Calls | | |
|----------------------------------|--|----|
| Calling Party Transformation CSS | <pre></pre> | * |
| 🗹 Use Device Pool Calling Party | Transformation CSS | |
| Outbound Calls | | |
| Calling Party Transformation CSS | <pre>< None ></pre> | * |
| 🗹 Use Device Pool Calling Party | Transformation CSS | |
| | | |
| Protocol Specific Information- | | |
| BLF Presence Group* | Standard Presence group | • |
| MTP Preferred Originating Codec* | 711ulaw | v. |
| Device Security Profile* | Third-party SIP Device Basic - digest auth enabled | • |
| Rerouting Calling Search Space | < None > | * |
| SUBSCRIBE Calling Search Space | < None > | * |
| SIP Profile* | Standard SIP Profile | * |
| Digest User | 1022 | * |
| 🕅 Media Termination Point Requir | ed | |
| 🕅 Unattended Port | | |
| Require DTMF Reception | | |
| MLPP Information | | |
| MLPP Domain < None > | | |

- c. Click Save
- 3. In this subtask, you will associate a DN to the third-party SIP device that you have just defined.
 - a. Click Line [1] Add a new DN

| Phone Configuration | Related Links: Back Te |
|--|--|
| 🔚 Save 🗶 Delete 🗋 Copy 蠀 | Reset 🖉 Apply Config 🛟 Add New |
| Status Status: Ready | |
| - Association Information Modify Button Items | Phone Type Product Type: Third-party SIP Device (Basic) Device Protocol: SIP |
| | Device Information |
| T | Registration Unknown |
| | IP Address Unknown |
| | Device is Active Device is not trusted |
| | MAC Address* CCEF485C0E9B |
| | Description CCEF485C0E9B spa112 line1 |
| | Device Peal* |

Note: you can also reach this link by navigating to Device > Phone > Find > Click the relevant Device Name > Line [1] – Add a new DN

b. Insert the necessary device information for your CUCM deployment:

| Directory Number C | onfigurati | DN | | | Related Li | nks: Configure Device |
|----------------------|--------------|----------------------------|-------|-----------|--|-----------------------|
| न Save 🗙 Delete | Reset | t 🖉 Apply Config 🛟 Add New | | | | |
| Status | | | | | | |
| i Status: Ready | | | | | | |
| Directory Number 1 | nformatio | n | | | | |
| Directory Number* | 1022 | | | | | |
| Route Partition | PM_HQ_PT | 8 | • | | | |
| Description | CCEF485C | 0E9B spa112 line1 | | | | |
| Alerting Name | spa112 line | 91 | | | | |
| ASCII Alerting Name | spa112 line | =1 | | | | |
| Associated Devices | SEPCCEF4 | 85C0E9B | * | | | |
| | | | | Edit De | vice | |
| | | | | Edit Lin | ne Appearance | |
| | | ~~ | | | | |
| Dissociate Devices | | | * | | | |
| | | | | | | |
| | 2 | | 107.0 | | | |
| Directory Number 9 | Gettings — | | | | | |
| Voice Mail Profile | | < None > | - | (Choose | e <none> to use system default)</none> | |
| Calling Search Space | | < None > | Ň | - | | |
| BLF Presence Group* | | Standard Presence group | | - | | |
| User Hold MOH Audio | Source | < None > | | · | | |
| Network Hold MOH Au | idio Source | < None > | | • | | |
| 🔲 Reject Anonymou | s Calls | | | | | |
| Directory URIs | | | | | | |
| Primary | | URI | | | Partitic | n |
| ۲ | | | | | < None > | . |
| Add Row | | | | | | |
| AAR Settings | | | | | | |
| | | Voice Mail | AA | R Destina | ation Mask | AAR |
| AAR | 🔲 or | | | | < | None > |
| 🗵 Retain this destin | ation in the | call forwarding history | | | | |
| | | | | | | |

| AAR or or 🗹 Retain this destination in the c | all forwarding history | | < None > | |
|---|------------------------|-------------|--|---------|
| Call Forward and Call Pickup S | ettings | | | |
| - | Voice Mail | Destination | Cal | ling Se |
| Calling Search Space Activation F | Policy | | Use System Default | |
| Forward All | 🗖 or | | < None > | |
| Secondary Calling Search Space | for Forward All | | < None > | |
| Forward Busy Internal | 🗐 or | | < None > | |
| Forward Busy External | 🖾 or | | < None > | |
| Forward No Answer Internal | 🖾 or | | < None > | |
| Forward No Answer External | 🗖 or | | < None > | |
| Forward No Coverage Internal | 🗖 or | | < None > | |
| Forward No Coverage External | 🗖 or | | < None > | |
| Forward on CTI Failure | 🖾 or | | < None > | |
| Forward Unregistered Internal | 🗖 or | | < None > | |
| Forward Unregistered External | | | < None > | |
| No Answer Ring Duration (seconds | <u></u> | | | |
| Call Pickup Group | < None > | • | | |
| | | | | |
| Park Monitoring | Union | | | |
| | Mail | Destination | Calling Sea | arch Sp |
| Park Monitoring Forward No | 🗖 or | | < None > | |
| Retrieve Destination External | | | means to call the parker's line. | |
| Park Monitoring Forward No Retrieve Destination Internal | 🗖 or | | < None > | |
| Park Monitoring Peversion Timer | | a F | lank value will use value set in Park Monitoring Pay | version |
| | | | | 015101 |
| MLPP Alternate Party Settings | 2 | | | |
| Target (Destination) | | | | |
| MLPP Calling Search Space | < None > | | | |
| MLPP No Answer Ring Duration (se | conds) | | | |
| | | | | _ |
| Line Settings for All Devices— | | | | |

| -Line Settings for All Devices | | | | |
|--|--------------------------------|--------------------|---------------------------------|--|
| Hold Reversion Ring Duration (seconds) | | | Setting the Hold Reversion | Ring Duration to zero |
| Hold Reversion Notification Interval (seconds) | | | Setting the Hold Reversion | Notification Interval t |
| Party Entrance Tone* | Default | * | | |
| Line 1 on Device SEPCCEF485C0E9B | | | | |
| Display (Caller ID) | calls. If you specify a pumber | Display text for a | line appearance is intended fo | r displaying text such f the caller |
| ASCII Display (Caller ID) | | | , not see the proper identity o | |
| External Phone Number Mask | | | | |
| Monitoring Calling < None > Search Space | | • | | |
| Multiple Call/Call Waiting Settings on De | vice SEPCCEF485C0E9B | | | |
| Note:The range to select the Max Number of (| alls is: 1-2 | | | |
| Maximum Number of Calls* | 2 | | | |
| Busy Trigger* | 2 | | (Less than or eq | qual to Max. Calls) |
| Forwarded Call Information Display on D | evice SEPCCEF485C0E9B— | | | |
| 🗷 Caller Name | | | | |
| 🔲 Caller Number | | | | |
| Redirected Number | | | | |
| 🗹 Dialed Number | | | | |
| Users Associated with Line | | | | |
| | Full Name | | User ID | |
| spa112 Line1, spa112 Line1 | | | 1022 | í |
| Associate End Users Select All | lear All Delete Selected | | | |
| Save Delete Reset Apply Cor | fig Add New | | | |

c. Associate the recently defined 1022 end user with the recently defined SPA122 Line 1 line. Click Associate End Users

| Caller Nu | imber | |
|-------------|----------------------|--|
| Redirecte | ed Number | |
| 🔽 Dialed Nu | umber | |
| JSELS ASSO | | |
| | HISOCIACE EIIA OSCIS | |

d. Select 1022 in the pop-up list



| 1022 | spa112 Line1 | spa112 Line1 | |
|---------------------|--------------------|--------------|--|
| elect All Clear All | Add Selected Close | | |

- e. Click Add Selected
- f. Click Save
- 4. In this subtask, you will associate the SPA112 Line1 user with the SPA112 Line1 third-party SIP device.
 - a. Navigate to User Management > End User > Click the 1022 link

| | spa112 Line1 | spa112 Line1 |
|------------------------|---------------------------|--------------|
| Add New . Select All . | Clear All Delete Selected | |

b. Navigate to Device Information > Device Association

| Device Information | |
|--------------------|--|
| Controlled Devices | |
| | Device Association |
| | Line Appearance Association for Presen |

c. Select the SPA112 Line1 device

| SEPCCEF485C0E9B | | SEPCCEF485C0E9B 1022 | | CCEF485C0E9 | E9B spa112 line1 | |
|-----------------|-----------|----------------------|---------------------|-----------------------|------------------------------|--|
| Select All | Clear All | Select All In Search | Clear All In Search | Save Selected/Changes | Remove All Associated Device | |

d. Click Save Selected/Changes

This completes the minimum CUCM configuration required to support a SPA112 ATA.



Configuring the SPA112 ATA

Overview

The following SPA112 administration tasks will be described in order to prepare the SPA112 for connecting the CUCM:

- 1. Defaulting the SPA112 to factory settings
- 2. Upgrading the SPA112 to the current firmware
- 3. Configuring Line 1 of the SPA112 to register to the CUCM

Detailed Instructions

In this subtask, you restore the SPA112 to a factory default state so that you are starting from a known configuration.

- Connect the SPA112 to your network. If you need help with connecting it and logging in, retrieve and follow the instructions in the most current version of the SPA112 Quick Start Guide located <u>here</u>.
 - a. Access the web-User Interface (web-UI) at the http://spa112IPaddress URL.
 - b. Take note of the Version displayed under the "Phone Adapter Configuration Utility" text. If your SPA112 firmware is older than 1.2.1(004), you *must* use Internet Explorer until you have upgraded to at least 1.2.1(004) else you will not see some components of the web-UI

The default administration credentials are admin / admin

- c. Navigate to Administration > Factory Defaults:
- d. Select both Restore Network Factory Defaults and Restore Voice Factory Defaults

| Quick Setup Network Set | ip Voice 🧧 | Administration | Status |
|---|---------------|-----------------------|------------|
| Management Log | Factory Defa | ults | |
| Factory Defaults Firmware Upgrade | Factory Defau | lts | |
| Config Management Reboot | Restore Netwo | ork Factory Defaults: | 🖲 Yes 🔘 No |
| | Restore Voice | Factory Defaults | 🖲 Yes 🔘 No |
| | Submit | Cancel | |

e. Click Submit



- 2. In this subtask, you upgrade your SPA112 to the most currently available SPA112 firmware available from <u>here</u>
 - a. If your SPA112 firmware is older than 1.2.1(004), you *must* use Internet Explorer until you have upgraded to at least 1.2.1(004) else you will not see some components of the web-UI

| Quick Setup Network | etup Voice Administration Status | |
|--------------------------------------|---------------------------------------|--------|
| Management Log | Firmware Upgrade | |
| Factory Defaults Firmware Upgrade | Firmware Upgrade | |
| Config Management Reboot | Please select a file to upgrade: | Browse |
| | Current firmware version: 1.3.1 (003) | |

- b. Navigate to Administration > Firmware Upgrade > Browse > select the SPA112 firmware you just downloaded > Click Upgrade
- 3. In this subtask, you configure Line 1 of the SPA112 to register to the CUCM
 - a. Log in to the SPA112 as the admin user. Default password is admin
 - b. Navigate to Voice tab > Line 1 tab:
 - i. SIP Settings > SIP Transport: TCP
 - ii. Proxy and Registration: Proxy: 10.99.31.140 [CUCM IP address]
 - iii. Subscriber Information:
 - 1. User ID: 1022
 - 2. Password: 1234
 - 3. Use Auth ID: yes
 - 4. Auth ID: 1022
 - iv. Dial Plan:
 - 1. Dial Plan: (*xx|[3469]11|0|00|[2-9]xxxxxx|1xxx[2-9]xxxxxS0|xxxxxxxxxx.|1xxx)
 - Addition in **bold red** to allow 4-digit dialing starting with 1



| ne 1 | | | | | |
|----------------------------|--------------|----|----------------------------|--------|------|
| General | | | | | |
| Line Enable: | yes 👻 | | | | |
| Streaming Audio Server (S/ | AS) | | | | |
| SAS Enable: | | | SAS DLG Refresh Intvl: | 30 | |
| SAS Inbound RTP Sink: | | | | | |
| NAT Settings | | | | | |
| NAT Mapping Enable: | | | NAT Keep Alive Enable: | no 👻 | |
| NAT Keep Alive Msg: | \$NOTIFY | | NAT Keep Alive Dest: | \$PROX | 7 |
| Network Settings | 0.52 | | | | |
| SIP ToS/DiffServ Value: | 0x68 | | SIP CoS Value: | 3 | ſ0-7 |
| RTP ToS/DiffServ Value: | 0xb8 | | RTP CoS Value: | 6 | 10-7 |
| Network Jitter Level: | high 👻 | | Jitter Buffer Adjustment: | yes 👻 | |
| SID Cottings | | | | 1 | |
| SIP Transport | TCP - | | SIP Port: | 5060 | |
| SIP 100REL Enable: | D0 - | | EXT SIP Port | 0000 | |
| Auth Resync-Reboot | ves 👻 | | SIP Proxy-Require: | | |
| SIP Remote-Party-ID: | ves 👻 | | SIP GUID: | no 🚽 | |
| SIP Debug Option: | none | - | RTP Log Intyl: | 0 | |
| Restrict Source IP: | | •1 | Referor Bye Delay: | 4 | |
| Refer Target Bye Delay: | 0 | | Referee Bye Delay: | 0 | |
| Refer-To Target Contact: | | | Sticky 183: | no 👻 | |
| Auth INVITE: | | | Reply 182 On Call Waiting: | | |
| Use Anonymous With RPID: | yes 👻 | | Use Local Addr In FROM: | | |
| Call Fastura Cattinua | | | | | |
| Blind Atto-Xfer Foshle | D0 - | | MOH Server: | | |
| Xfer When Hangun Conf | ves 👻 | | Conference Bridge LIRL | - | |
| Conference Bridge Ports | 3 | | Enable IP Dialing: | DO - | |
| Emergency Number: | | | Mailbox ID: | | |
| Drow and Devictation | | | | | |
| Provy and Registration | 10 99 31 140 | | | | |
| Outbound Provy: | 10.00.01.140 | | | | |
| Use Outbound Provy | 00 - | | Use OB Provy In Dialog | ves - | |
| 030 Outbound PT0Xy. | | | Males Call Males + Daw | yes 🔻 | |
| Register: | Vec - | | Make Lail Murbour Fac. | DP | |

die aussian der

| USE DINS SILV. | | DINS SRV AUTO PRETIX: | | |
|---------------------------|---------------|----------------------------|---------------|--|
| Proxy Fallback Intvl: | 3600 | Proxy Redundancy Method: | Normal | |
| Mailbox Subscribe URL: | | Mailbox Subscribe Expires: | | |
| Subscriber Information | | | Party Martin | |
| Display Name: | | User ID: | 1022 | |
| Password: | ***** | Use Auth ID: | yes 👻 | |
| Auth ID: | 1022 | Resident Online Number: | | |
| SIP URI: | | | | |
| Supplementary Service Sub | scription | | | |
| Call Waiting Serv: | yes 👻 | Block CID Serv: | yes 👻 | |
| Block ANC Serv: | yes 👻 | Dist Ring Serv: | yes 👻 | |
| Cfwd All Serv: | yes 👻 | Cfwd Busy Serv: | yes 👻 | |
| Cfwd No Ans Serv: | yes 👻 | Cfwd Sel Serv: | yes 👻 | |
| Cfwd Last Serv: | yes 👻 | Block Last Serv: | yes 👻 | |
| Accept Last Serv: | yes 👻 | DND Serv: | yes 👻 | |
| CID Serv: | yes 👻 | CWCID Serv: | yes 👻 | |
| Call Return Serv: | yes 👻 | Call Redial Serv: | yes 👻 | |
| Call Back Serv: | yes 👻 | Three Way Call Serv: | yes 👻 | |
| Three Way Conf Serv: | yes 👻 | Attn Transfer Serv: | yes 👻 | |
| Unattn Transfer Serv: | yes 👻 | MVI Serv: | yes 👻 | |
| VMVI Serv: | yes 👻 | Speed Dial Serv: | yes 👻 | |
| Secure Call Serv: | yes 👻 | Referral Serv: | yes 👻 | |
| Feature Dial Serv: | yes 👻 | Service Announcement Serv: | no 👻 | |
| Reuse CID Number As Name: | yes 👻 | | | |
| Audio Configuration | | | S | |
| Preferred Codec: | G711u 👻 | Second Preferred Codec: | Unspecified 👻 | |
| Third Preferred Codec: | Unspecified 👻 | Use Pref Codec Only: | no 👻 | |
| Use Remote Pref Codec: | no 👻 | Codec Negotiation: | Default 👻 | |
| G729a Enable: | yes 👻 | Silence Supp Enable: | no 👻 | |
| G726-32 Enable: | yes 👻 | Silence Threshold: | medium 👻 | |
| FAX V21 Detect Enable: | yes 👻 | Echo Canc Enable: | yes 👻 | |
| FAX CNG Detect Enable: | yes 👻 | FAX Passthru Codec: | G711u 👻 | |
| FAX Codec Symmetric: | yes 👻 | DTMF Process INFO: | yes 👻 | |
| EAX Passtbru Method | NSE - | DTME Process AVT | ves 👻 | |

| and the second dealers of the second | a state and the second state of the second state | an a | C131 |
|--------------------------------------|--|--|------------------|
| TAX*CGGeo/Symmetric. · · · | 1985 · · · · · · · · · · · · · · · · · · · | | |
| FAX Passthru Method: | NSE 🔻 | DIME Process AVI: | yes 👻 |
| FAX Process NSE: | yes 👻 | DTMF Tx Method: | Auto 👻 |
| FAX Disable ECAN: | no 👻 | DTMF Tx Mode: | Strict 👻 |
| DTMF Tx Strict Hold Off Time: | 70 | FAX Enable T38: | no 👻 |
| Hook Flash Tx Method: | None 👻 | FAX T38 Redundancy: | 1 👻 |
| FAX T38 ECM Enable: | yes 👻 | FAX Tone Detect Mode: | caller or callee |
| Symmetric RTP: | no 👻 | FAX T38 Return to Voice: | no 👻 |
| Modem Line: | no 🔻 | | |
| Dial Plan | | | |
| Dial Plan: | (*xx [3469]11 0 00 [2-9]xxxx | xx 1xxx[2-9]xxxxxxS0 xxxxxxxxxxxx. 1xxx) | |
| FXS Port Polarity Configurat | ion | | S |
| Idle Polarity: | Forward 👻 | Caller Conn Polarity: | Forward 👻 |
| Callee Copp Polarity: | Forward - | | |

c. Click Submit

This completes the minimum SPA112 configuration required to register to a CUCM.



Verifying Registration Status

Knowing the registration status of your SPA112 is helpful when troubleshooting.

CUCM

View the SPA112 Line 1's registration status from the CUCM's point of view by navigating to Device > Phone > Find:

| | SIP | ۰۰ ⁻ تنعینسیتند کر متبنا ت متص د ۰۰ | والمراجعة المراجع والمراجع والمتحاص والمتحاص والمحاص والمعارية والمعارية والمعارية والمعارية والمعارية والمعارية | and the second sec | ~~~~~ | | ورام محيولا سواهر سال المندر فريامتهما والمسير والمراور و | v., | |
|--------|----------|---|--|--|-------|---------------------------------|---|---------------------------------------|---------------|
| |) III | SEPCCEF485C0E9B | CCEF485C0E9B spa112 line1 | PM HQ DP | SIP | Registered with 10.99.31.140 | 10.99.31.132 | ß | 1. |
| . Suad | d Nous | IL Clear All. Loolat | o-Selected | Coofic to Selected. | | | | ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ | - 4 50 - 100. |

SPA112

View the SPA112 Line 1's registration status from the SPA112's point of view by navigating to the Voice tab > Information tab:

| uick Setup Networl | k Setup Voice Administra | ation Status | | |
|--------------------|---------------------------------|-------------------|-----------------------|-------------|
| rmation tem | Information | | | |
| visionina | Product Information | | | |
| ional | Product Name: | SPA112 | Serial Number: | CBT154305BS |
| 1 | Software Version: | 1.3.1(003) | Hardware Version: | 1.0.0 |
| r1 | MAC Address: | CCEF485C0E9A | Client Certificate: | Installed |
| r 2 | Customization: | Open | | |
| | System Status | | | |
| | Current Time: | 4/5/2013 13:27:37 | Elapsed Time: | 00:50:48 |
| | RTP Packets Sent: | 317 | RTP Bytes Sent: | 50720 |
| | RTP Packets Recv: | 210 | RTP Bytes Recv: | 50400 |
| | SIP Messages Sent: | 42 | SIP Bytes Sent: | 30115 |
| | SIP Messages Recv: | 74 🛁 | SIP Bytes Recv: | 27208 |
| | External IP: | | | |
| | Line 1 Status | | | |
| | Hook State: | Off | Registration State: | Registered |
| | Last Registration At: | 4/5/2013 13:26:02 | Next Registration In: | 23 s |
| | Message Waiting: | No | Mapped SIP Port: | |
| | Call Back Active: | No | | |
| | Last Called Number: | 1001 | Last Caller Number: | 1001 |
| | Call 1 State: | Idle | Call 2 State: | Invalid |
| | Call 1 Tone: | None | Call 2 Tone: | None |



Testing

Once you have completed configuring the CUCM, the SPA112, and have verified that the SPA112's Line 1 is registered with the CUCM, you should test both inbound and outbound calls.

SPA112 Inbound Calls

From a known working phone, dial the extension associated with the Line 1 device of the SPA112, 1022 in this document. The analog phone connected to the SPA112 should ring. When you answer, verify that there is two-way audio.

SPA112 Outbound Calls

From the analog phone connected to the SPA112 PHONE 1 port, dial the extension of a known working phone registered to the CUCM, 1001 in this document. The target phone should ring. When you answer, verify that there is two-way audio.

SIP Registration Packet Trace

Following is a Wireshark packet capture of a successful SIP registration with the CUCM:

| No. Info | Time | ToD | Source | Destination | Protocol | Length |
|---|--|---|--|---|---|--------------------|
| 325 Request | 69.454 REGISTER | 14:36:55.516 R sip:10.99.3 | 10.99.31.132 L.140 | 10.99.31.140 | SIP | 647 |
| Frame 32 Ethernet (f0:de:f Internet (10.99.3 Transmis Len: 581 Session Requ Mess | 25: 647 by II, Src 1:11:22:3 Protocol 31.140) ssion Conf Initiation uest-Line sage Heade Via: SIP, From: <s: To: <sip Call-ID: CSeq: 269 Max-Forwa Contact: P-Station User-Ager P-Station Content-J Allow: AG Supported</sip </s: | ytes on wire : Cisco_5c:0e: 33) l Version 4, 5 crol Protocol (F : REGISTER signer /2.0/TCP 10.99 :1022@10.99.31 f81e24aa-db5(543 REGISTER ards: 70 <sip:1022@10 -Name: ;mac=cont: Cisco/SPAT n-Name: ;mac=c</sip:1022@10 | (5176 bits), 647 bytes 9a (cc:ef:48:5c:0e:9a Src: 10.99.31.132 (10.9 , Src Port: 5077 (5077 REGISTER) 9:10.99.31.140 SIP/2.0 9.31.132:5077;branch=z .31.140>;tag=212cfce5c 1.140> 053bf@10.99.31.132 .99.31.132:5077;transpo ccef485c0e9a; sn=CBT15- 12-1.3.1(003) =ccef485c0e9a; display: EL, INFO, INVITE, NOTIO | captured (5176 bits) o), Dst: WistronI_11:22 99.31.132), Dst: 10.99), Dst Port: sip (5060 9hG4bK-564954c4 8d03e9o0 prt=tcp>;expires=3600 4305BS =""; sn=CBT154305BS FY, OPTIONS, REFER | on interfa :33 .31.140), Seq: 1 | ace 0 , Ack: 1, |
| No. Info | Time | ToD | Source | Destination | Protocol | Length |
| 327 Status: | 69.456 100 Tryin | 14:36:55.518 ng (0 bind: | 10.99.31.140 ings) | 10.99.31.132 | SIP | 349 |

Frame 327: 349 bytes on wire (2792 bits), 349 bytes captured (2792 bits) on interface 0 Ethernet II, Src: WistronI_11:22:33 (f0:de:f1:11:22:33), Dst: Cisco_5c:0e:9a (cc:ef:48:5c:0e:9a)

CISCO Internet Protocol Version 4, Src: 10.99.31.140 (10.99.31.140), Dst: 10.99.31.132 (10.99.31.132)Transmission Control Protocol, Src Port: sip (5060), Dst Port: 5077 (5077), Seq: 1, Ack: 582, Len: 283 Session Initiation Protocol (100) Status-Line: SIP/2.0 100 Trying Message Header Via: SIP/2.0/TCP 10.99.31.132:5077;branch=z9hG4bK-564954c4 From: <sip:1022@10.99.31.140>;tag=212cfce5c8d03e9o0 To: <sip:1022@10.99.31.140> Date: Fri, 05 Apr 2013 19:36:51 GMT Call-ID: f81e24aa-db5053bf@10.99.31.132 CSeq: 26543 REGISTER Content-Length: 0 No. Time ToD Source Destination Protocol Length Tnfo 328 69.457 14:36:55.519 10.99.31.140 10.99.31.132 472 SIP Status: 401 Unauthorized (0 bindings) Frame 328: 472 bytes on wire (3776 bits), 472 bytes captured (3776 bits) on interface 0 Ethernet II, Src: WistronI_11:22:33 (f0:de:f1:11:22:33), Dst: Cisco_5c:0e:9a (cc:ef:48:5c:0e:9a) Internet Protocol Version 4, Src: 10.99.31.140 (10.99.31.140), Dst: 10.99.31.132 (10.99.31.132)Transmission Control Protocol, Src Port: sip (5060), Dst Port: 5077 (5077), Seq: 284, Ack: 582, Len: 406 Session Initiation Protocol (401) Status-Line: SIP/2.0 401 Unauthorized Message Header Via: SIP/2.0/TCP 10.99.31.132:5077;branch=z9hG4bK-564954c4 From: <sip:1022@10.99.31.140>;tag=212cfce5c8d03e9o0 To: <sip:1022@10.99.31.140>;tag=2075367907 Date: Fri, 05 Apr 2013 19:36:51 GMT Call-ID: f81e24aa-db5053bf@10.99.31.132 CSeq: 26543 REGISTER WWW-Authenticate: Digest realm="ccmsipline", nonce="iVST/8LeNp0TaD2e7s00mp9kyP7k7/w9", algorithm=MD5 Content-Length: 0 Time Destination Protocol Length No. TOD Source Tnfo 14:36:55.520 10.99.31.132 10.99.31.140 329 69.458 SIP 647 Request: REGISTER sip:10.99.31.140 | Frame 329: 647 bytes on wire (5176 bits), 647 bytes captured (5176 bits) on interface 0 Ethernet II, Src: Cisco_5c:0e:9a (cc:ef:48:5c:0e:9a), Dst: WistronI_11:22:33 (f0:de:f1:11:22:33) Internet Protocol Version 4, Src: 10.99.31.132 (10.99.31.132), Dst: 10.99.31.140 (10.99.31.140)Transmission Control Protocol, Src Port: 5077 (5077), Dst Port: sip (5060), Seq: 582, Ack: 1, Len: 581 Session Initiation Protocol (REGISTER) Request-Line: REGISTER sip:10.99.31.140 SIP/2.0 Message Header Via: SIP/2.0/TCP 10.99.31.132:5077;branch=z9hG4bK-564954c4 From: <sip:1022@10.99.31.140>;tag=212cfce5c8d03e9o0 To: <sip:1022@10.99.31.140> Call-ID: f81e24aa-db5053bf@10.99.31.132 CSeq: 26543 REGISTER Max-Forwards: 70 Contact: <sip:1022@10.99.31.132:5077;transport=tcp>;expires=3600 P-Station-Name: ;mac=ccef485c0e9a; sn=CBT154305BS User-Agent: Cisco/SPA112-1.3.1(003)

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P-Station-Name: ;mac=ccef485c0e9a; display=""; sn=CBT154305BS Content-Length: 0 Allow: ACK, BYE, CANCEL, INFO, INVITE, NOTIFY, OPTIONS, REFER Supported: replaces No. Time ToD Source Destination Protocol Length Info 332 69.459 14:36:55.521 10.99.31.140 10.99.31.132 349 STP Status: 100 Trying (0 bindings) Frame 332: 349 bytes on wire (2792 bits), 349 bytes captured (2792 bits) on interface 0 Ethernet II, Src: WistronI_11:22:33 (f0:de:f1:11:22:33), Dst: Cisco_5c:0e:9a (cc:ef:48:5c:0e:9a) Internet Protocol Version 4, Src: 10.99.31.140 (10.99.31.140), Dst: 10.99.31.132 (10.99.31.132)Transmission Control Protocol, Src Port: sip (5060), Dst Port: 5077 (5077), Seq: 690, Ack: 1163, Len: 283 Session Initiation Protocol (100) Status-Line: SIP/2.0 100 Trying Message Header Via: SIP/2.0/TCP 10.99.31.132:5077;branch=z9hG4bK-564954c4 From: <sip:1022@10.99.31.140>;tag=212cfce5c8d03e9o0 To: <sip:1022@10.99.31.140> Date: Fri, 05 Apr 2013 19:36:51 GMT Call-ID: f81e24aa-db5053bf@10.99.31.132 CSeq: 26543 REGISTER Content-Length: 0 No. Time ToD Source Destination Protocol Length Info 14:36:55.522 10.99.31.140 333 69.460 10.99.31.132 SIP 472 Status: 401 Unauthorized (0 bindings) Frame 333: 472 bytes on wire (3776 bits), 472 bytes captured (3776 bits) on interface 0 Ethernet II, Src: WistronI 11:22:33 (f0:de:f1:11:22:33), Dst: Cisco 5c:0e:9a (cc:ef:48:5c:0e:9a) Internet Protocol Version 4, Src: 10.99.31.140 (10.99.31.140), Dst: 10.99.31.132 (10.99.31.132)Transmission Control Protocol, Src Port: sip (5060), Dst Port: 5077 (5077), Seq: 973, Ack: 1163, Len: 406 Session Initiation Protocol (401) Status-Line: SIP/2.0 401 Unauthorized Message Header Via: SIP/2.0/TCP 10.99.31.132:5077;branch=z9hG4bK-564954c4 From: <sip:1022@10.99.31.140>;tag=212cfce5c8d03e9o0 To: <sip:1022@10.99.31.140>;tag=1680687713 Date: Fri, 05 Apr 2013 19:36:51 GMT Call-ID: f81e24aa-db5053bf@10.99.31.132 CSeq: 26543 REGISTER WWW-Authenticate: Digest realm="ccmsipline", nonce="iVST/8LeNp0TaD2e7s00mp9kyP7k7/w9", algorithm=MD5 Content-Length: 0 Time ToD Source Destination Protocol Length No. Info 336 69.472 14:36:55.534 10.99.31.132 10.99.31.140 SIP 827 Request: REGISTER sip:10.99.31.140 | Frame 336: 827 bytes on wire (6616 bits), 827 bytes captured (6616 bits) on interface 0 Ethernet II, Src: Cisco 5c:0e:9a (cc:ef:48:5c:0e:9a), Dst: WistronI 11:22:33 (f0:de:f1:11:22:33) Internet Protocol Version 4, Src: 10.99.31.132 (10.99.31.132), Dst: 10.99.31.140 (10.99.31.140)

Transmission Control Protocol, Src Port: 5077 (5077), Dst Port: sip (5060), Seq: 1163, Ack: 1379, Len: 761 Session Initiation Protocol (REGISTER) Request-Line: REGISTER sip:10.99.31.140 SIP/2.0 Message Header Via: SIP/2.0/TCP 10.99.31.132:5077;branch=z9hG4bK-c6ef563c From: <sip:1022@10.99.31.140>;tag=212cfce5c8d03e9o0 To: <sip:1022@10.99.31.140> Call-ID: f81e24aa-db5053bf@10.99.31.132 CSeq: 26544 REGISTER Max-Forwards: 70 Authorization: Digest username="1022", realm="ccmsipline", nonce="iVST/8LeNp0TaD2e7s00mp9kyP7k7/w9", uri="sip:10.99.31 .140", algorithm=MD5, response="003c24b4c124aa7f5019dd5a73a71346" Contact: <sip:1022@10.99.31.132:5077;transport=tcp>;expires=3600 P-Station-Name: ;mac=ccef485c0e9a; sn=CBT154305BS User-Agent: Cisco/SPA112-1.3.1(003) P-Station-Name: ;mac=ccef485c0e9a; display=""; sn=CBT154305BS Content-Length: 0 Allow: ACK, BYE, CANCEL, INFO, INVITE, NOTIFY, OPTIONS, REFER Supported: replaces Time Destination No. TOD Source Protocol Length Info 337 69.488 14:36:55.550 10.99.31.140 10.99.31.132 349 SIP Status: 100 Trying (0 bindings) Frame 337: 349 bytes on wire (2792 bits), 349 bytes captured (2792 bits) on interface 0 Ethernet II, Src: WistronI_11:22:33 (f0:de:f1:11:22:33), Dst: Cisco_5c:0e:9a (cc:ef:48:5c:0e:9a) Internet Protocol Version 4, Src: 10.99.31.140 (10.99.31.140), Dst: 10.99.31.132 (10.99.31.132)Transmission Control Protocol, Src Port: sip (5060), Dst Port: 5077 (5077), Seq: 1379, Ack: 1924, Len: 283 Session Initiation Protocol (100) Status-Line: SIP/2.0 100 Trying Message Header Via: SIP/2.0/TCP 10.99.31.132:5077;branch=z9hG4bK-c6ef563c From: <sip:1022@10.99.31.140>;tag=212cfce5c8d03e9o0 To: <sip:1022@10.99.31.140> Date: Fri, 05 Apr 2013 19:36:51 GMT Call-ID: f81e24aa-db5053bf@10.99.31.132 CSeq: 26544 REGISTER Content-Length: 0 Destination Protocol Length No. Time ToD Source Tnfo 14:36:55.560 10.99.31.140 338 69,498 10.99.31.132 471 SIP Status: 200 OK (1 bindings) Frame 338: 471 bytes on wire (3768 bits), 471 bytes captured (3768 bits) on interface 0 Ethernet II, Src: WistronI_11:22:33 (f0:de:f1:11:22:33), Dst: Cisco_5c:0e:9a (cc:ef:48:5c:0e:9a) Internet Protocol Version 4, Src: 10.99.31.140 (10.99.31.140), Dst: 10.99.31.132 (10.99.31.132)Transmission Control Protocol, Src Port: sip (5060), Dst Port: 5077 (5077), Seq: 1662, Ack: 1924, Len: 405 Session Initiation Protocol (200) Status-Line: SIP/2.0 200 OK Message Header Via: SIP/2.0/TCP 10.99.31.132:5077;branch=z9hG4bK-c6ef563c From: <sip:1022@10.99.31.140>;tag=212cfce5c8d03e9o0 To: <sip:1022@10.99.31.140>;tag=552965170 Date: Fri, 05 Apr 2013 19:36:51 GMT

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Call-ID: f81e24aa-db5053bf@10.99.31.132 CSeq: 26544 REGISTER Expires: 120 Contact: <sip:1022@10.99.31.132:5077;transport=tcp>;x-cisco-newreg Supported: X-cisco-sis-6.0.0 Content-Length: 0

Troubleshooting:

Reboot SPA112 after making any changes on the CUCM to ensure that the SPA112 appropriately registers to the CUCM.

SIP REGISTER: 404: Not found:

Warning 399 "Unable to find device/user in database"

The SPA112 fails to register with the CUCM. Monitoring the network interaction and filtering for SIP, you see a SIP status message of 404 Not Found

| SWINES | wardender de la como | maximum son sold and so the solution | والمروية الكافيات فمصحا والمرودة حالفان | and weather a | more and share of the | and any range source | warmanagery and a second |
|--------------|---|--|---|-----------------------|--|--------------------------------|---|
| 214 | 09:54:14.342 | 10.99.31.140 | 10.99.31.132 | SIP | 435 Status: 40 | 4 Not Found | (0 bindings) |
| Landon Andre | and the summer the free free fitteets and | Character Adam a print the the Addition in | Alexandric marchideathroods (Alexandri | Anna and makes the to | A AND A REAL PROPERTY AND A REAL PROPERTY. | March Contractor of Contractor | and the sector of the sector of the sector shares |

Looking at the SIP Message Header, you see:



Warning: 399 "Unable to find device/user in database"

Possible Solution

Define the 1022 user as the phone Digest User at Device > Phone > Find > Click the SPA112 Line 1 Link > Protocol Specific Information > Digest User: 1022

| 3LF Presence Group* | Standard Presence group | • |
|---|--|---|
| MTP Preferred Originating Codec st | 711ulaw | ¥ |
| Device Security Profile* | Third-party SIP Device Basic - digest auth enabled | ¥ |
| Rerouting Calling Search Space | < None > | • |
| SUBSCRIBE Calling Search Space | < None > | • |
| SIP Profile* | Standard SIP Profile | • |
| Digest User | 1022 | • |

SIP REGISTER: 404: Not found:

Warning 399 "Line not configured"

The SPA112 fails to register with the CUCM. Monitoring the network interaction and filtering for SIP, you see a SIP status message of 404 Not Found:



Looking at the SIP Message Header, you see:



Warning: 399 "Line not configured"



Possible Solution

Verify that a DN is assigned to Line [1] by navigating to Device > Phone > Find > Click the relevant Device Name > Line [1] – Add a new DN



Outbound Call Fails with "Call cannot be completed as dialed" Message

The SPA112 is able to receive calls without problem but when attempting to make an outbound call, you hear a message saying "Call cannot be completed as dialed".

Possible Solution

Verify that the SPA112 is using the same transport protocol that the CUCM is expecting by default. By default, the SPA112 uses UDP as the SIP transport while CUCM expects TCP. Modify the SPA112 to use TCP as the transport by changing Voice tab > Line 1 tab > SIP Settings > SIP Transport: TCP

| Quick Setup | Network Setup | Voice Administ | ration Status | | | |
|-------------|---------------|------------------------------|---|--|--|--|
| nation m | | Line 1 | | | | |
| sionina | | General | | | | |
| nal | | Line Enable: | yes 👻 | | | |
| ser 1 | | Streaming Audio Server (SAS) | | | | |
| 2 | | SAS Enable: | no 👻 | | | |
| 2 | | SAS Inbound RTP Sink: | | | | |
| | | NAT Settings | 5 - January 19 - 19 - 19 - 19 - 19 - 19 - 19 - 19 | | | |
| | | NAT Mapping Enable: | no 👻 | | | |
| | | NAT Keep Alive Msg: | \$NOTIFY | | | |
| | | Network Settings | | | | |
| | | SIP ToS/DiffServ Value: | 0x68 | | | |
| | | RTP ToS/DiffServ Value: | 0xb8 | | | |
| | | Network Jitter Level: | high 🔶 | | | |
| | | SIP Settings | | | | |
| | | SIP Transport: | TCP 👻 | | | |
| | | SIP 100REL Enable: | no 👻 | | | |

Additional Resources

- <u>SPA112 resources document</u> contains links to the quick start guide, user guide, admin guide, provisioning guide, firmware release notes, firmware versions, application notes, and troubleshooting tips
- <u>CUCM Documentation Guide</u> contains links to all relevant CUCM documents

<end>