

# Configure Outbound Dialer for UCCX Agent Based Predictive

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## Introduction

This document describes how to configure an Outbound Campaign for Agent-Based Predictive for Unified Contact Center Express (UCCX).

## Prerequisites

### Requirements

Cisco recommends knowledge of these topics:

- Cisco Unified Border Element (CUBE) configuration
- Unified Contact Center Express (UCCX) configuration

### Components Used

The information in this document is based on these hardware and software versions:

- UCCX version 12.5.1.11002-481
- CUCM version 12.5.1.11900-146
- ISR4451 version 17.03.04a

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

## Background Information

Specific requirements for this document include:

- Finesse Agent on Ready mode.
- ISR4451 with CUBE basic configuration and PVDM for Call Progress Analysis (CPA) functionality.
- Internet Telephony Service Provider (ITSP) integrated with CUBE.
- Unified CCX Outbound license

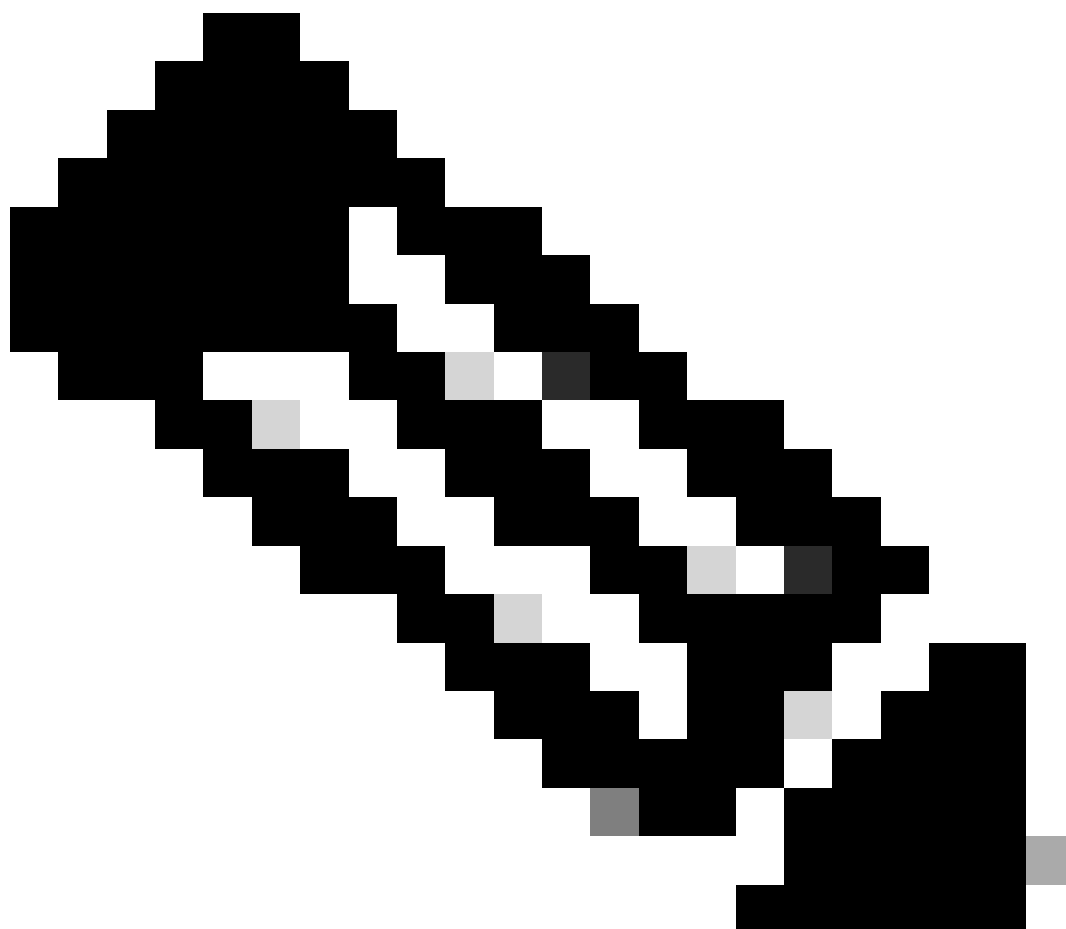
On UCCX Outbound Dialer feature, there are five types of campaigns:

Agent-Based:

- Agent Direct Preview
- Agent Progressive
- **Agent Predictive**

IVR Based:

- Progressive
  - Predictive
- 

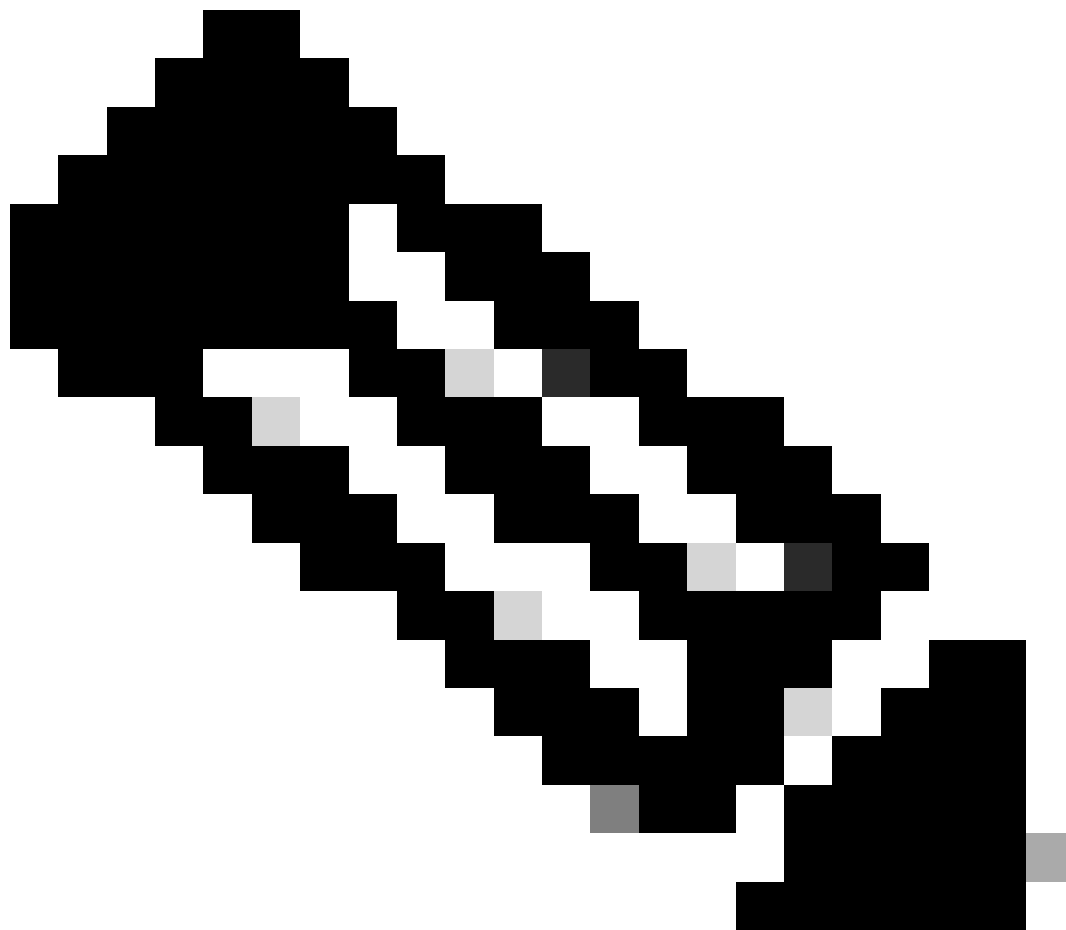


**Note:** In this document, you focus on the configuration for Agent-Based Predictive

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There are some services on UCCX that must be in service:

- Outbound subsystem
  - Unified CM Telephony subsystem
  - RmCm subsystem
  - Unified CCX Database
- 



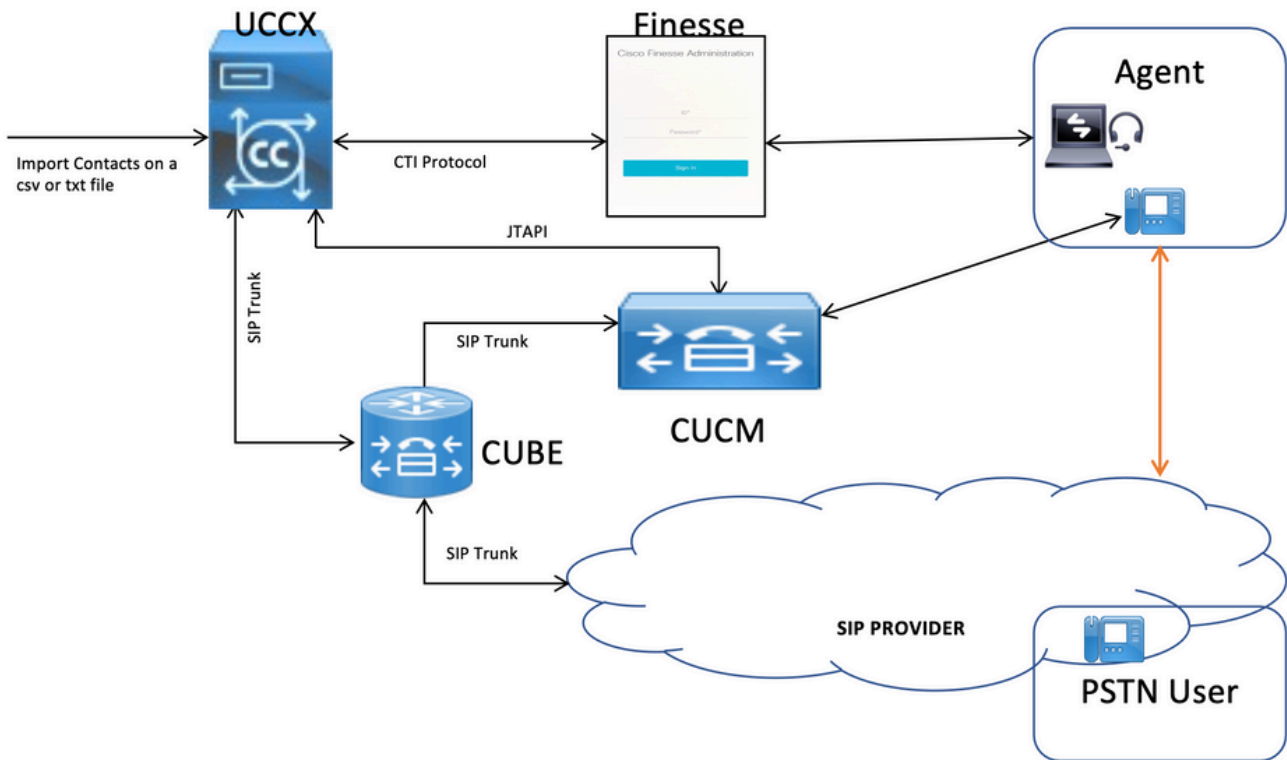
**Note:** Navigate to **Cisco Unified CCX Serviceability Menu > Tools > Control Center Network Services**

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## Configure

### Network Diagram

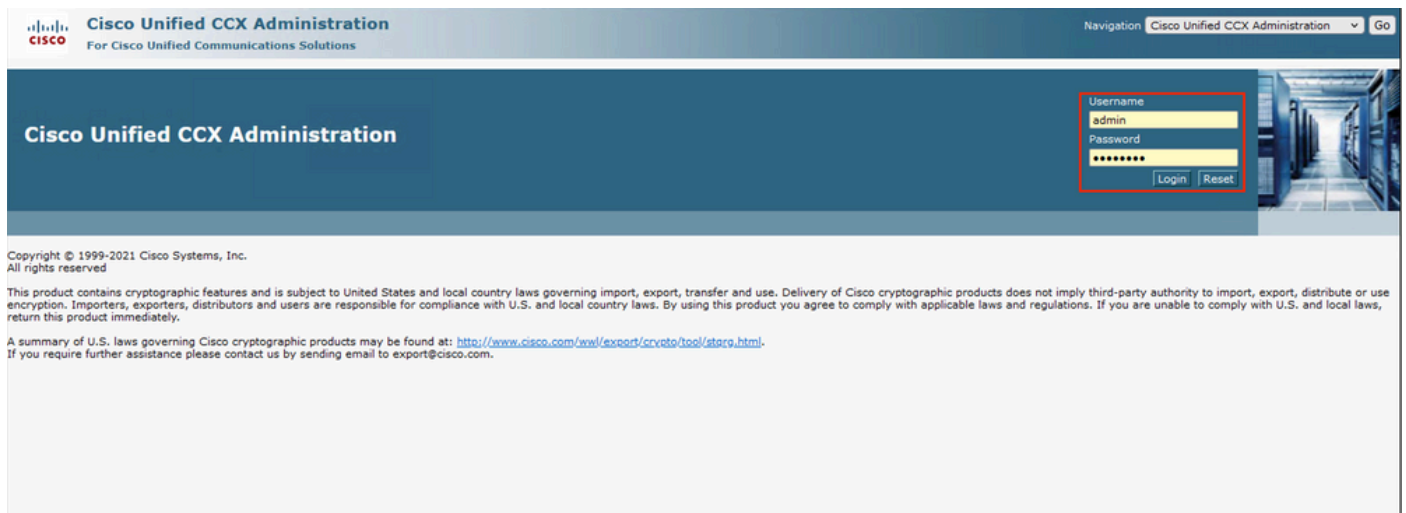
This topology diagram shows the interaction of UCCX, Finesse, CUCM, and CUBE for outbound campaigns:



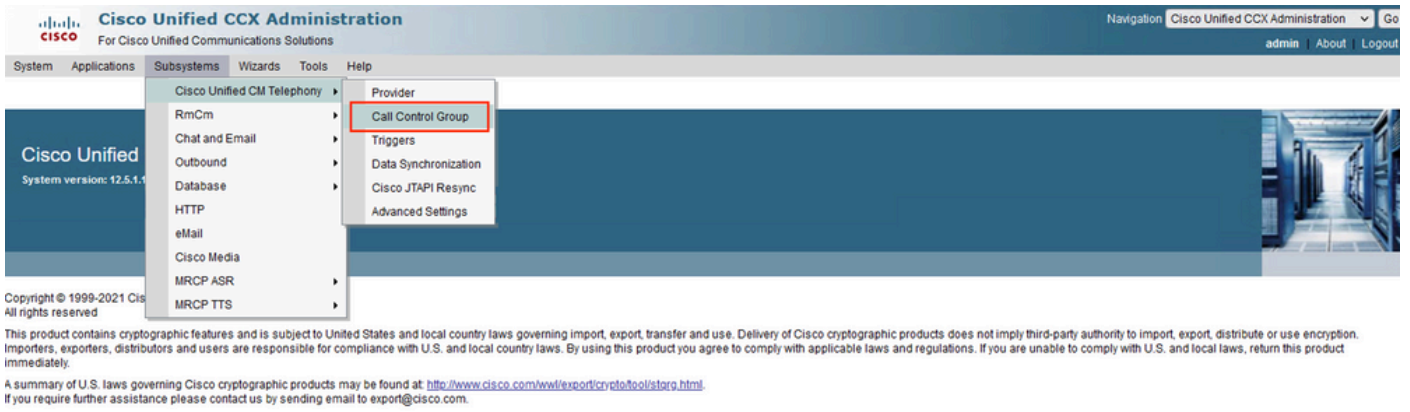
## Configurations

### UCCX configuration

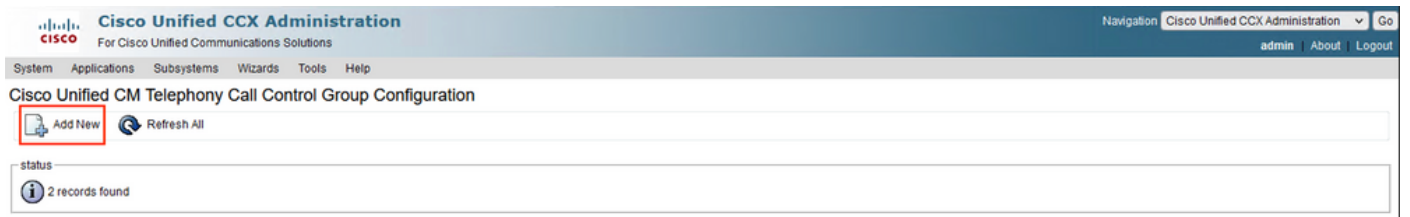
1. Log into the CCX Administration:



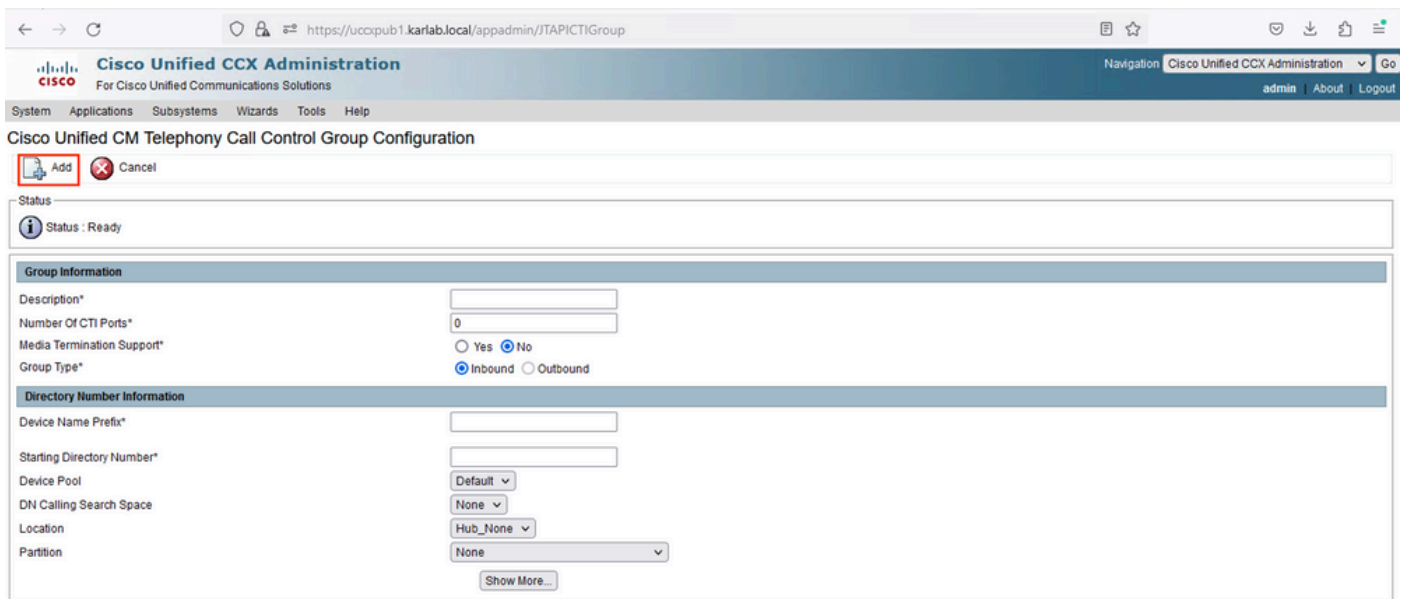
2. Then click on **Subsystem Menu > CM Telephony > Call Control Group**:



Then Click on Add New:



3. Fill out the mandatory fields marked with asterisks such as the Description, number of CTI ports, Group Type, Device Name Prefix, and Directory Number, and click Add:



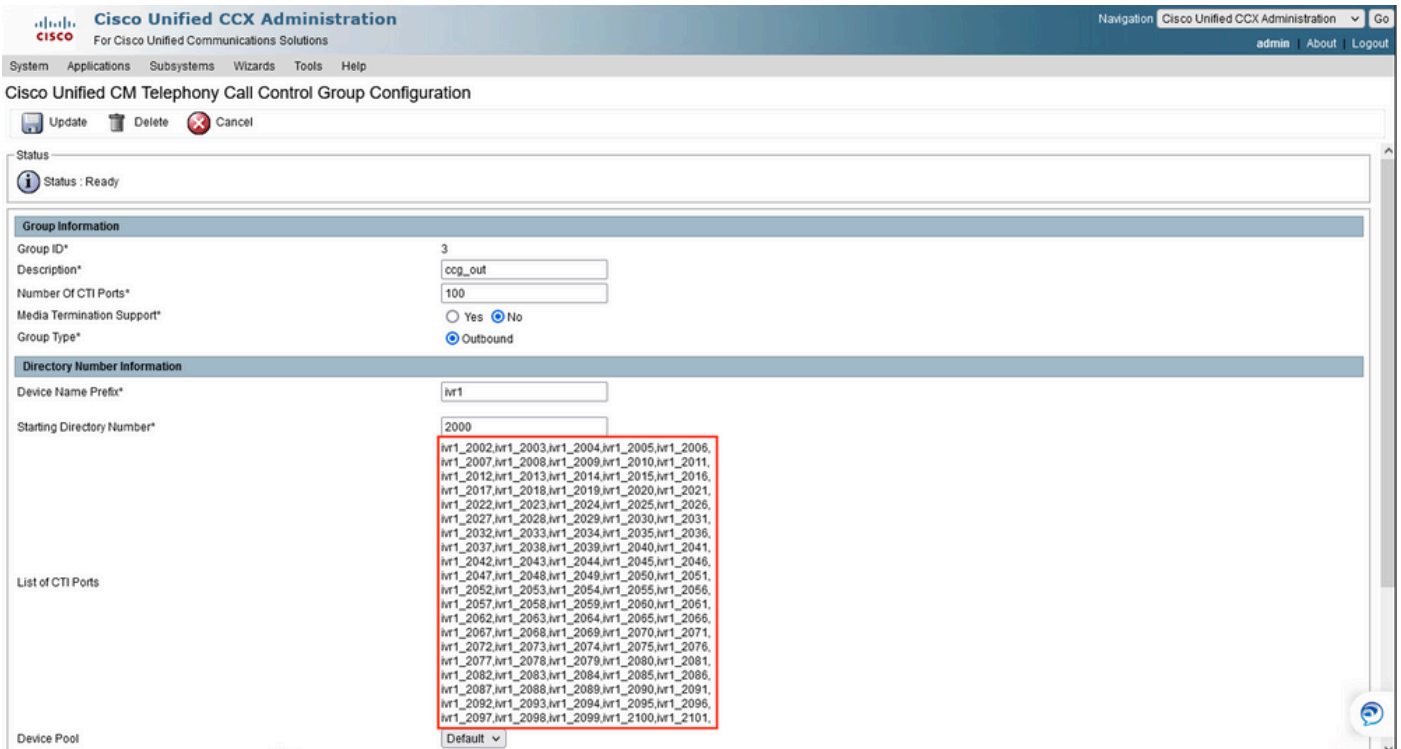


**Note:**

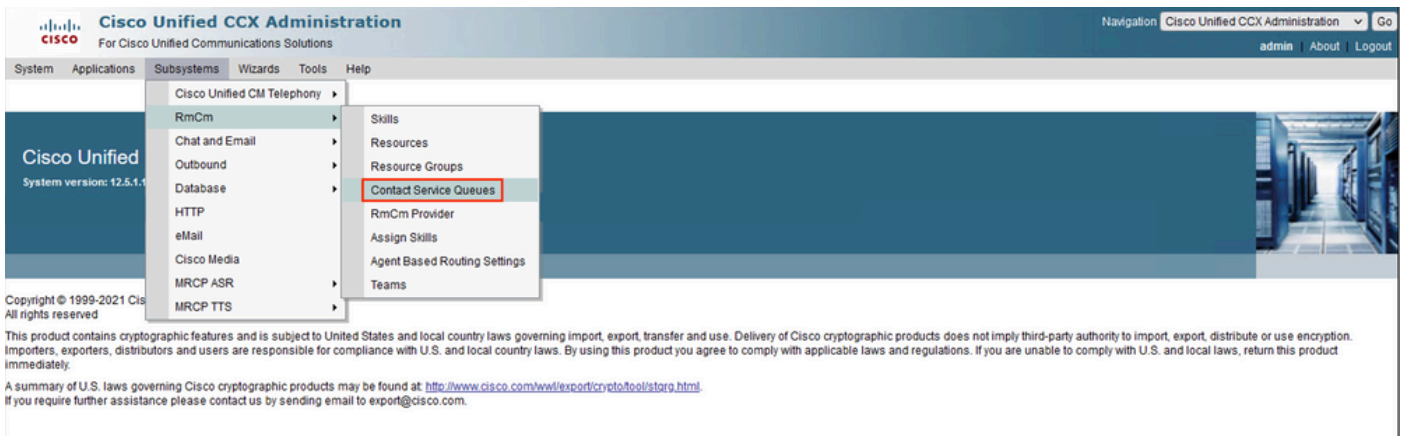
- On Group Type select Outbound.
- Once you click Add the Status changes to In Progress, UCCX begins to create the CTI Ports.

---

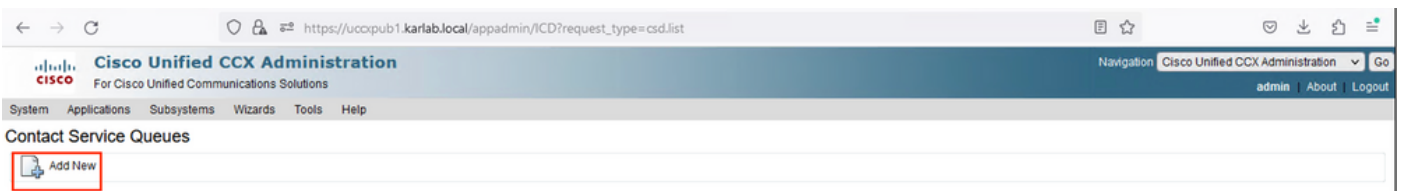
This is the expected output you receive after you click Add:



4. Navigate to **Subsystems Menu > RMCM > Contact Service Queues** to create the Predictive CSQ:



Then click Add New:



5. Fill out the mandatory fields marked with an asterisk such as Contact Service Queue Name, and select the most appropriate options for your specific environment, then click Next:

**Cisco Unified CCX Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CCX Administration Go  
admin | About | Logout

System Applications Subsystems Wizards Tools Help

### Contact Service Queue Configuration

Next Cancel

Status: Ready

Contact Service Queue Name\*

Contact Service Queue Type: Voice

Contact Queuing Criteria: FIFO

Automatic Wrapup\*:  Enabled  Disabled

Wrapup Time\*:  Enabled  Second(s)  Disabled

Resource Pool Selection Model\*:

Service Level\*:

Service Level Percentage\*:

Prompt:

Next Cancel

**i** \* indicates required item

This is the expected output:

**Cisco Unified CCX Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CCX Administration Go  
admin | About | Logout

System Applications Subsystems Wizards Tools Help

### Contact Service Queue Configuration

Next Delete Cancel Open Printable Report of this CSQ configuration

Status: Ready

Contact Service Queue Name\*

Contact Service Queue Type: Voice

Contact Queuing Criteria: FIFO

Automatic Wrapup\*:  Enabled  Disabled

Wrapup Time\*:  Enabled  Second(s)  Disabled

Resource Pool Selection Model\*:

Service Level\*:

Service Level Percentage\*:

Prompt:

Next Delete Cancel

**i** \* indicates required item

6. Then click Next, select the required skills, and add them, and finally click Add:

**Cisco Unified CCX Administration**  
For Cisco Unified Communications Solutions

Navigation: Cisco Unified CCX Administration Go  
admin | About | Logout

System Applications Subsystems Wizards Tools Help

### Contact Service Queue Configuration

Add Cancel Show Resources

Contact Service Queue Name sss

Resource Selection Criteria:

Select Required Skills:

Skills	Minimum Competence	Delete
English	<input type="text" value="5"/>	<input type="text" value=""/>

Add Cancel

**i** 1-Beginner, 10-Expert

7. Now configure the Outbound section, so navigate to **Subsystem Menu > Outbound > General:**



**Cisco Unified CCX Administration**  
For Cisco Unified Communications Solutions

Navigation | Cisco Unified CCX Administration | Go  
admin | About | Logout

System Applications Subsystems Wizards Tools Help

### General Configuration

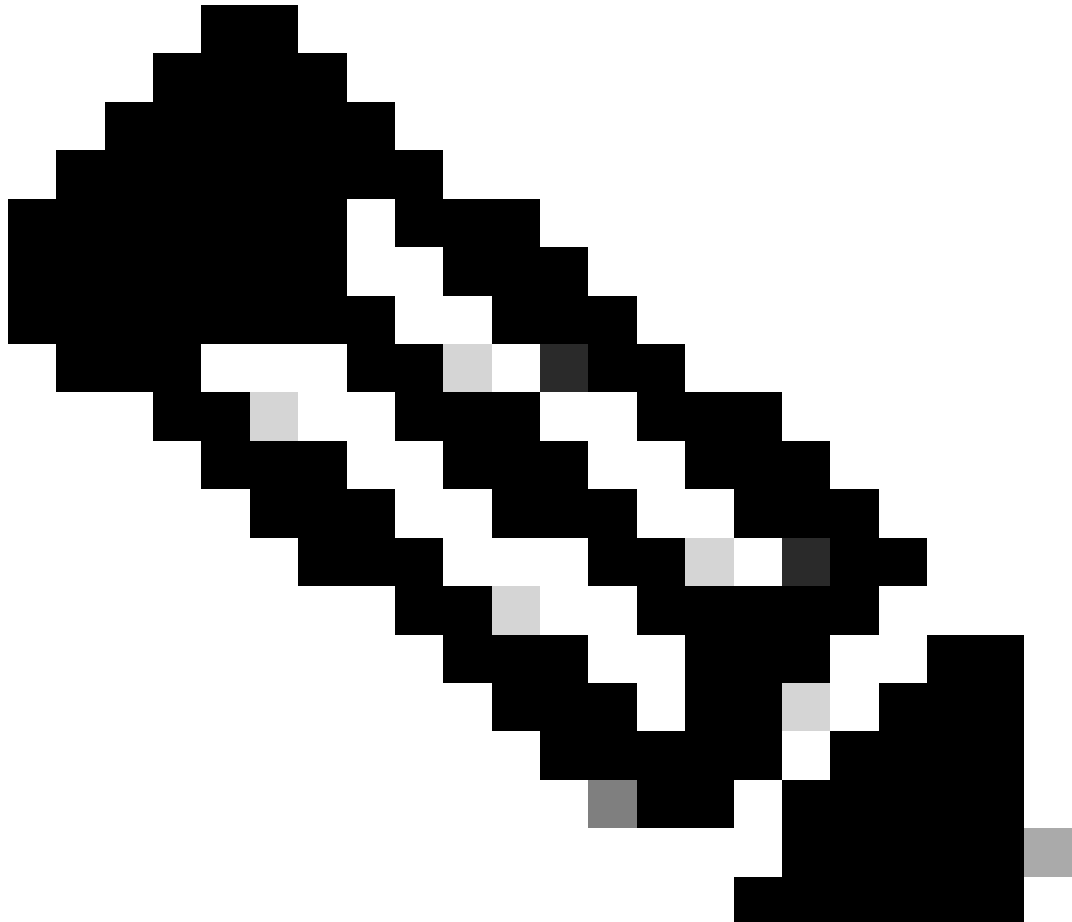
Status  
Status : Ready

Customer Dialing Time Range (hh:mm)\*  
Start Time 1:00 AM  
End Time 11:00 PM  
Outbound Call Timeout\* (seconds) 60  
Dialing Prefix  
Long Distance Prefix  
International Prefix  
Local Area Code  
Do Not Remove Local Area Code When Dialing   
Auto Answer  Enable for predictive and progressive campaigns

Assigned CSQs  
AgentBasedDirectPreview(100)  
**AgentBasedPredictive(100)**  
AgentBasedProgressive(100)  
csq1(10)

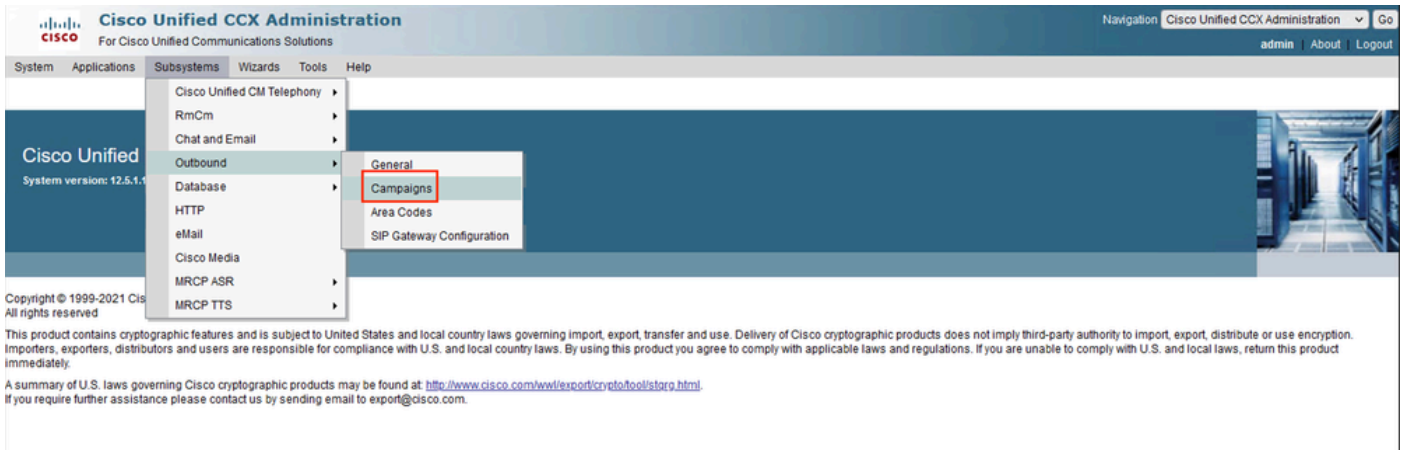
Available CSQs  
AgentBasedPredictive

% of Logged in Agents for Outbound 10

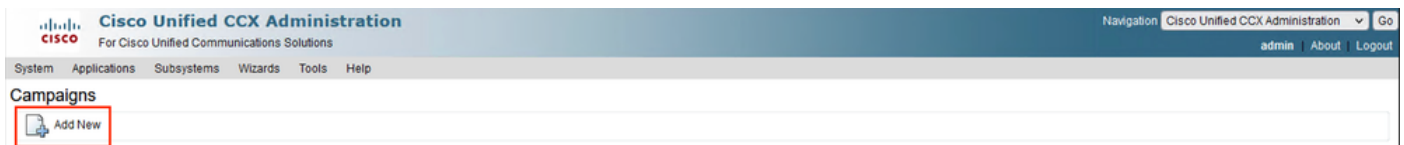


**Note:** Here you need to add the Predictive CSQ created in the previous step to the Available CSQs section and click update.

8. Navigate to **Subsystem Menu > Outbound > Campaigns** to create the Agent-Based Predictive campaign:



Click on Add New



9. Then select the Agent-Based Campaign Type, and also select the Dialer Type of Predictive, and then click Next:



10. Then fill out the mandatory values marked with an asterisk like Campaign Name, Start and End Time, Campaign Calling Number, and other desired values according to your specific needs.

**Cisco Unified CCX Administration**  
For Cisco Unified Communications Solutions

Navigation Cisco Unified CCX Administration Go  
admin | About | Logout

System Applications Subsystems Wizards Tools Help

### Agent Predictive Campaign Configuration

Add Cancel

Status  
Status : Ready

Automatic Import of Contacts  
Status : Not Configured.

Parameter Name	Parameter Value	Suggested Value
Campaign Name*	<input type="text"/>	
Enabled*	<input type="radio"/> Yes <input checked="" type="radio"/> No	
Description	<input type="text"/>	
Start Time (hh:mm)*	8:00 AM Central Daylight Time	
End Time (hh:mm)*	9:00 PM Central Daylight Time	
Campaign Calling Number*	<input type="text"/>	
Maximum Attempts to Dial Contact*	3	3
Callback Time Limit*	15 Minute(s)	15
Callback Missed*	Reschedule for same time next business day	Reschedule for same time next business day

### Configuration Continues:

Dialing Options

Lines Per Agent(1-3)*	<input type="text" value="1.5"/>	
Maximum Lines Per Agent(1-3)*	<input type="text" value="3.0"/>	
Predictive Correction Pace(10-1000)*	<input type="text" value="100"/>	100
Predictive Gain*	<input type="text" value="1.0"/>	1.0
Call Abandon Limit(0-100)*	<input type="text" value="3.0"/> %	3
Handle Low Volume as Voice	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Answering Machine Treatment	<input checked="" type="radio"/> Transfer To IVR <input type="radio"/> End Call	Transfer To IVR
	Trigger* : <input type="text" value="Select Trigger"/>	
	AppName : <input type="text"/>	
Abandoned Call Treatment	<input checked="" type="radio"/> Transfer To IVR <input type="radio"/> Abandon Call	Transfer To IVR
	Trigger* : <input type="text" value="Select Trigger"/>	
	AppName : <input type="text"/>	

Dial Settings

No Answer Ring Limit*	<input type="text" value="15"/> Second(s)	15
Abandoned Call Wait Time*	<input type="text" value="2"/> Second(s)	2

Retries

No Answer Delay*	<input type="text" value="60"/> Minute(s)	60
Busy Signal Delay*	<input type="text" value="60"/> Minute(s)	60
Customer Abandoned Delay*	<input type="text" value="0"/> Minute(s)	0
Dialer Abandoned Delay*	<input type="text" value="0"/> Minute(s)	0

Assigned CSQs

Available CSQs



**Note:** It is important that you click on Enable "yes" in this section.

---

This is the expected result:

## Agent Predictive Campaign Configuration

Save Cancel Import Contacts Delete All Contacts Open Printable Report

Status: Ready

Automatic Import of Contacts: Status: Not Configured.

Parameter Name	Parameter Value	Suggested Value
Campaign Name*	AgentBasedPredictive	
Enabled*	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Description	AgentBasedPredictive	
Start Time (hh:mm)*	1:00 AM Central Daylight Time	
End Time (hh:mm)*	11:00 PM Central Daylight Time	
Campaign Calling Number*	1800	
Maximum Attempts to Dial Contact*	3	3
Callback Time Limit*	15 Minute(s)	15
Callback Missed*	Reschedule for same time next business day	Reschedule for same time next business day

Dialing Options

Lines Per Agent(1-3)*	1.5	
Maximum Lines Per Agent(1-3)*	3.0	
Predictive Correction Pace(10-1000)*	100	100
Predictive Gain*	1.0	1.0
Call Abandon Limit(0-100)*	3.0 %	3
Handle Low Volume as Voice	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Answering Machine Treatment	<input type="radio"/> Transfer To IVR <input checked="" type="radio"/> End Call	Transfer To IVR
Abandoned Call Treatment	<input type="radio"/> Transfer To IVR <input checked="" type="radio"/> Abandon Call	Transfer To IVR

11. Add the proper Predictive CSQ on Assigned CSQs and click Add.

Dial Settings

No Answer Ring Limit*	15	Second(s)	15
Abandoned Call Wait Time*	2	Second(s)	2

Retries

No Answer Delay*	60	Minute(s)	60
Busy Signal Delay*	60	Minute(s)	60
Customer Abandoned Delay*	0	Minute(s)	0
Dialer Abandoned Delay*	0	Minute(s)	0

Assigned CSQs

Available CSQs

AgentBasedPredictive

AgentBasedPredictive

Add Cancel Import Contacts Delete All Contacts Open Printable Report

\* - indicates required item

12. Finally, navigate to **Subsystem Menu > Outbound > SIP Gateway Configuration**, and type the specific IP Address of the CUBE that handles the outbound calls:

Cisco Unified CCX Administration

Navigation Cisco Unified CCX Administration Go

admin About Logout

System Applications Subsystems Wizards Tools Help

## SIP Gateway Configuration

Update Cancel

Status: Ready

Gateway Configuration

Gateway Hostname/IP Address*	10.2.10.70
Gateway Port*	5060
Local CCX Port*	5065
Local User Agent*	Cisco-UCCX
Transport Protocol*	<input checked="" type="radio"/> UDP <input type="radio"/> TCP

Call Progress Analysis Configuration

Parameter Name	Parameter Value	Suggested Value
Minimum Silence Period (100 - 1000)*	375	375
Analysis Period (1000 - 10000)*	2500	2500
Maximum Time Analysis (1000 - 10000)*	3000	3000
Minimum Valid Speech Time (50 - 500)*	112	112
Maximum Term Tone Analysis (1000 - 60000)*	15000	15000

Update Cancel

## CUBE Configuration

Add global configuration on CUBE under voice service Voip and add the CPA global parameters:

```
<#root>
```

```
voice service voip
```

```
ip address trusted list
ipv4 0.0.0.0 0.0.0.0
mode border-element
no supplementary-service sip refer      ---->This command avoids to send Refer SIP message to ITSP
allow-connections sip to sip
cpa timing live-person 2501
cpa timing term-tone 15500
cpa threshold active-signal 18db
```

---

**Note:** Make sure you do not need to configure allow trusted list, otherwise you need to configure each ip address of the UCCX and CUCM here.

---

Configure dspfarm services on the voice card:

```
<#root>
```

```
voice-card 0/1
```

```
  dsp services dspfarm
```

Configure the dspfarm profile and enable Call Progress Analysis (CPA):

```
<#root>
```

```
dsp services dspfarm
```

```
  dspfarm profile 1 transcode
```

```
  description dialer-lab
```

```
  codec g729abr8
```

```
  codec g729ar8
```

```
  codec g711alaw
```

```
  codec g711ulaw
```

```
  call-progress-analysis
```

```
    <-- This line enables CPA on the dspfarm
```

```
  maximum sessions 10
```

```
  associate application CUBE
```

```
    <--Remeber to use CUBE application here
```

---

**Note:** On the cube router for this lab the PVDM is installed on the slot 0/1:

---

```
<#root>
```

```
#sh inventory
```

```
---Output omitted
```

```
NAME: "subslot 0/1 db module 0", DESCR: "PVDM4-64 Voice DSP Module" PID: PVDM4-64
```

```
---Output omitted
```

Configure the inbound dial peer:

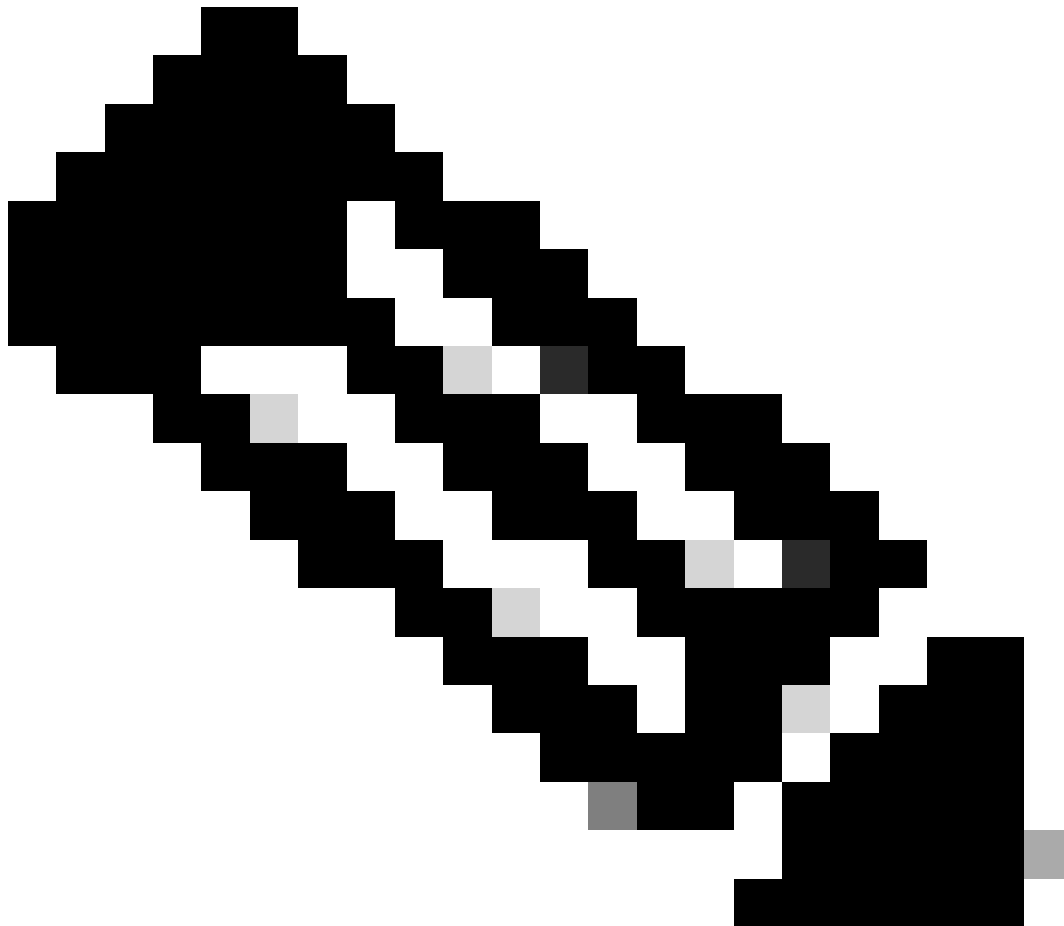
```
<#root>
```

```
dial-peer voice 10 voip
```



```
description dialer IncomingDP
session protocol sipv2
incoming called-number .    <--This dot means that the dial peer receives any digit
dtmf-relay rtp-nte
codec g711ulaw
no vad
```

---



**Note:** Remember there are so many ways to receive a call on a dial peer, this is only an example for this lab using incoming called-number command.

---

Configure the outbound dial peer pointing to the ITSP:

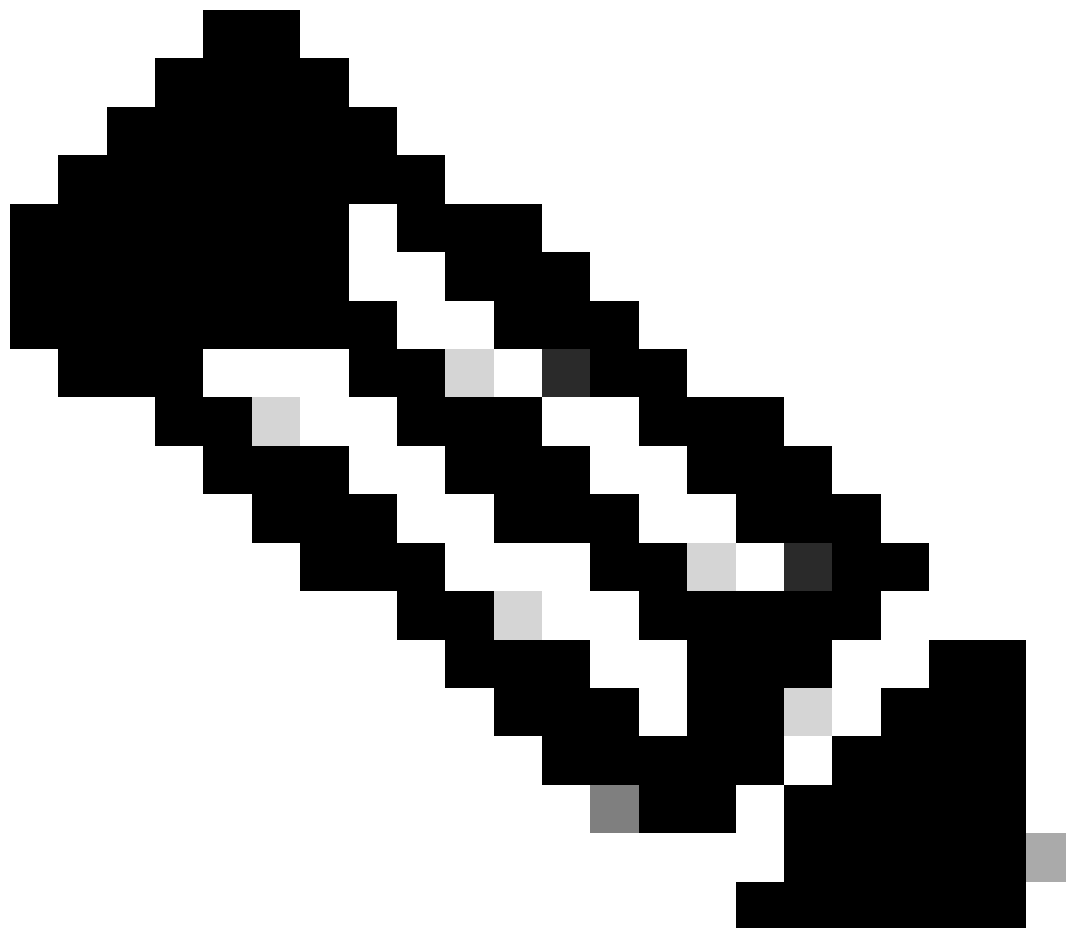
```
<#root>
```

```
dial-peer voice 400 voip
```

```
description ** DIALER ITSP SIDE **
destination-pattern 9001$
```

```
session protocol sipv2
session target ipv4:10.4.14.4 <--ITSP IP Address
dtmf-relay rtp-nte
codec g711ulaw
no vad
```

---



**Note:** Remember that you need to point to the ITSP IP and create the proper destination pattern for your specific dial plan.

---

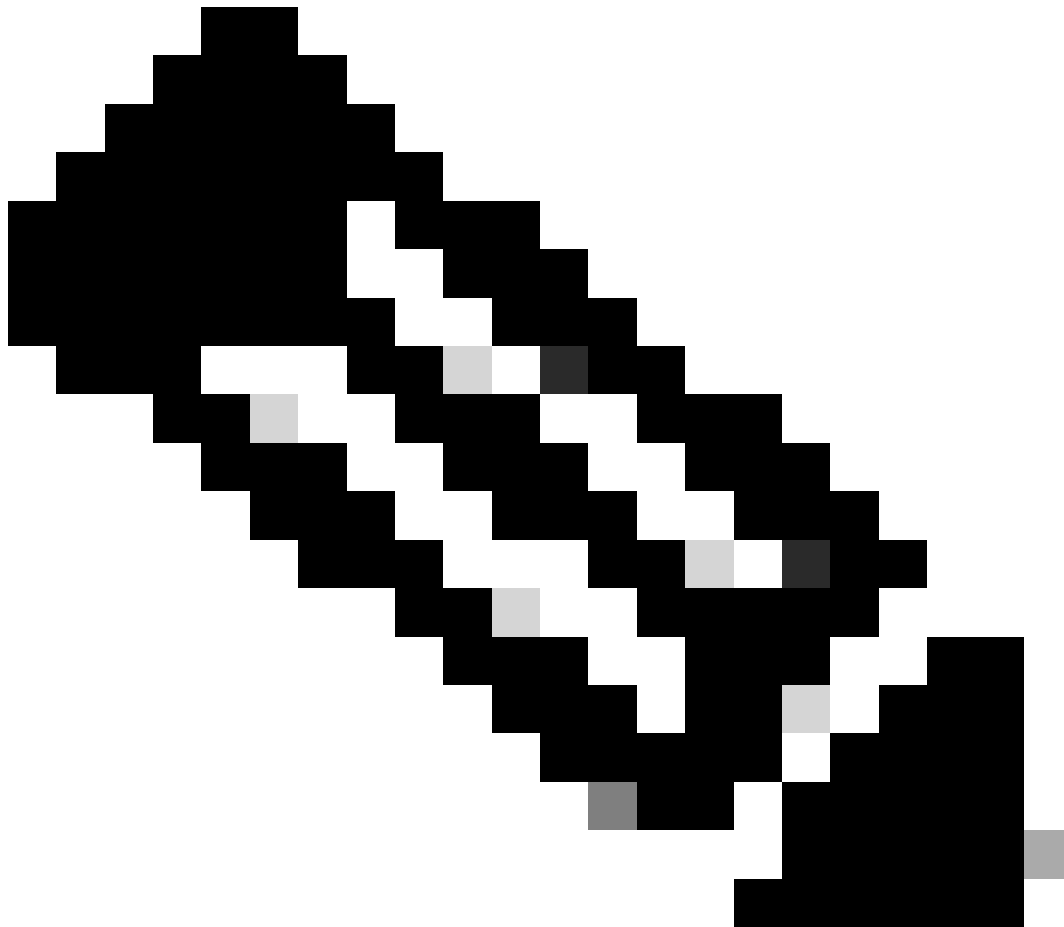
Configure the dial peer that points to the CUCM agent:

```
<#root>
```

```
dial-peer voice 500 voip
description ** DIALER AGENT SIDE **
destination-pattern 1026 <--Agent Extension, this can be a range of extensions.
session protocol sipv2
session target ipv4:10.2.10.30 <--IP Address of the Call Manager
dtmf-relay rtp-nte
codec g711ulaw
```

no vad

---



**Note:** This dial peer is only an example for this lab and it is being sent to a specific agent extension registered on the CUCM.

---

---

**Note:** Unified CCX does not support the translation or modification of the phone number that it uses to dial out outbound calls. Any "voice translation rules" configured in the gateway that modifies the phone number are not supported.

---

## Verify

Verify the dspfarm is up, active and associated and also the CPA is enabled:

```
<#root>
```

```
#show dspfarm profile 1
```

Dspfarm Profile Configuration

```
Profile ID = 1, Service = TRANSCODING, Resource ID = 1  
Profile Description : dialer-lab  
Profile Service Mode : Non Secure  
Profile Admin State :
```

UP

Profile Operation State :

ACTIVE

Application : CUBE Status :

ASSOCIATED

Resource Provider : FLEX\_DSPRM Status : UP

Total Number of Resources Configured : 10

Total Number of Resources Available : 10

Total Number of Resources Out of Service : 0

Total Number of Resources Active : 0

Codec Configuration: num\_of\_codecs:4

Codec : g711ulaw, Maximum Packetization Period : 30

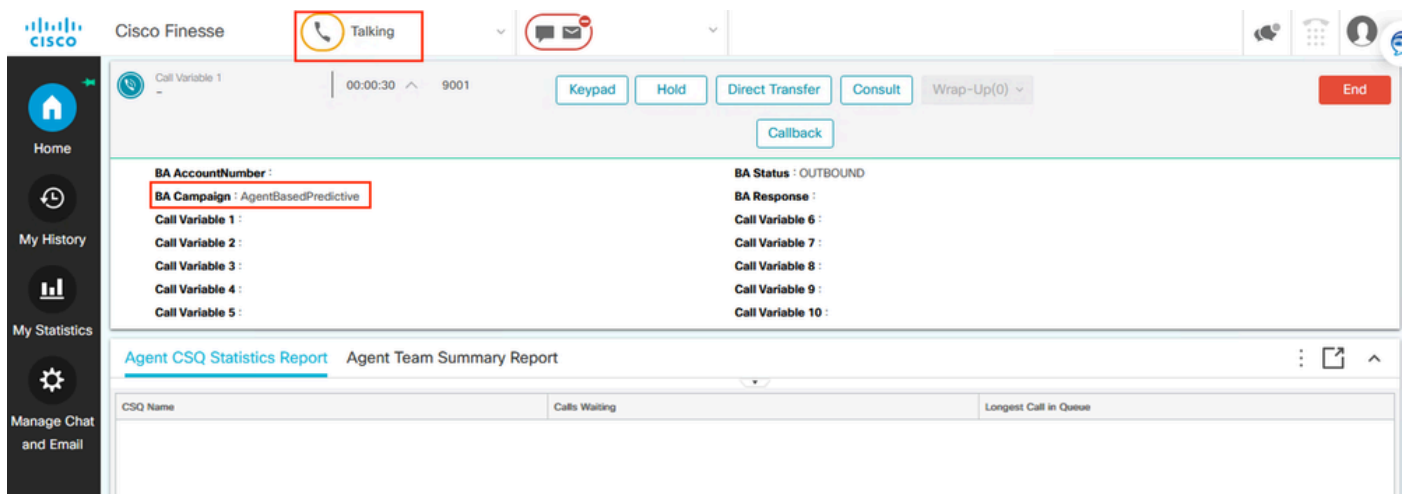
Codec : g711alaw, Maximum Packetization Period : 30

Codec : g729ar8, Maximum Packetization Period : 60

Codec : g729abr8, Maximum Packetization Period : 60

Call Progress Analysis : ENABLED

Verify the agent goes to Talking State on Finesse and the BA Campaign is the AgentBasedPredictive:



## Troubleshoot

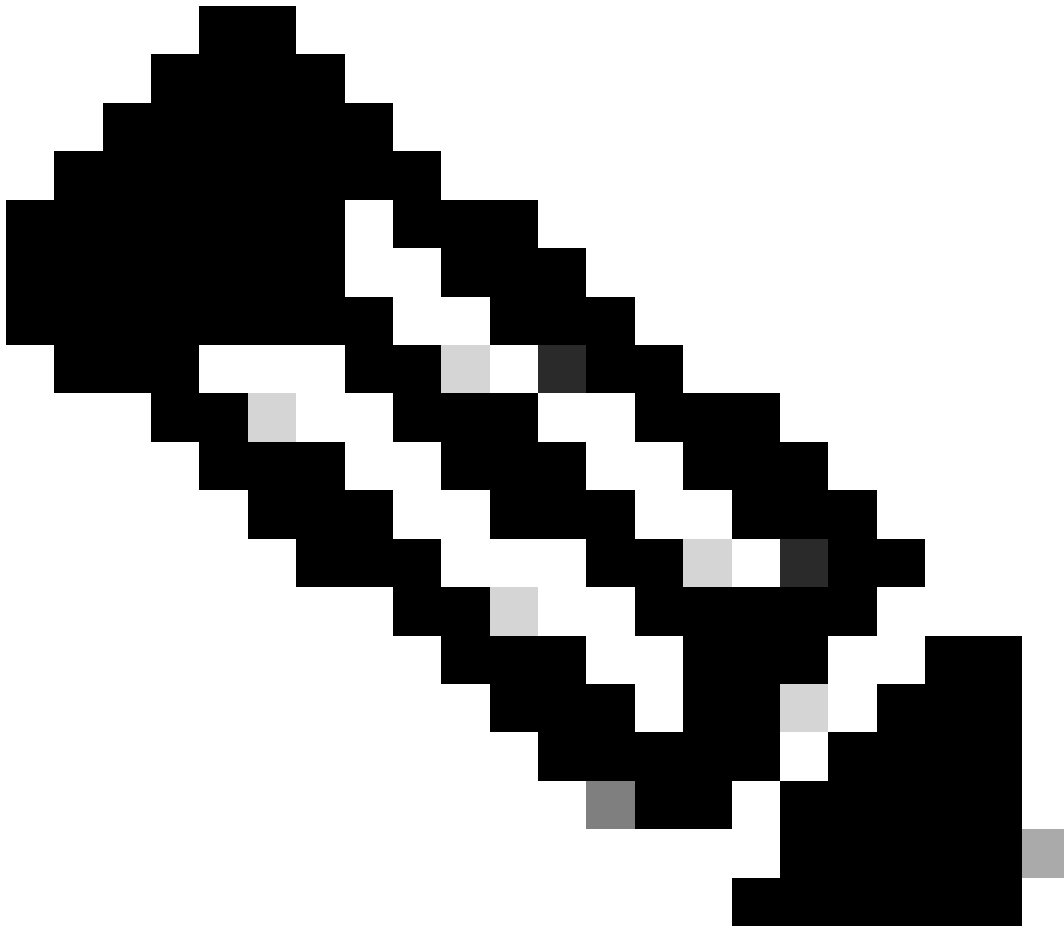
The easiest way to troubleshoot is to collect debugs on CUBE with this configuration:

```
conf t
service timestamps debug datetime localtime msec
service timestamps log datetime msec
service sequence-numbers
logging buffered 10000000 debug
no logging console
no logging monitor
default logging rate-limit
default logging queue-limit
voice iec syslog
```

exit

```
Debug voice ccapi inout      <-- CCAPI debug allows to verify the dial peers matched.  
Debug ccsip messages        <--Enables SIP messages logs  
Debug ccsip error           <--Enables SIP Errors logs
```

---



**Note:** Another way to collect logs is by enabling traces on the UCCX side, for this refer to the Tech Note on UCCX Tracing Levels on the Outbound voice calls section for more information.

---

Once you collect the CUBE logs you need to validate you are matching the correct dial peers for three legs:

<#root>

Incoming Dial-peer=

10 <--First Leg

Outgoing Dial-peer=

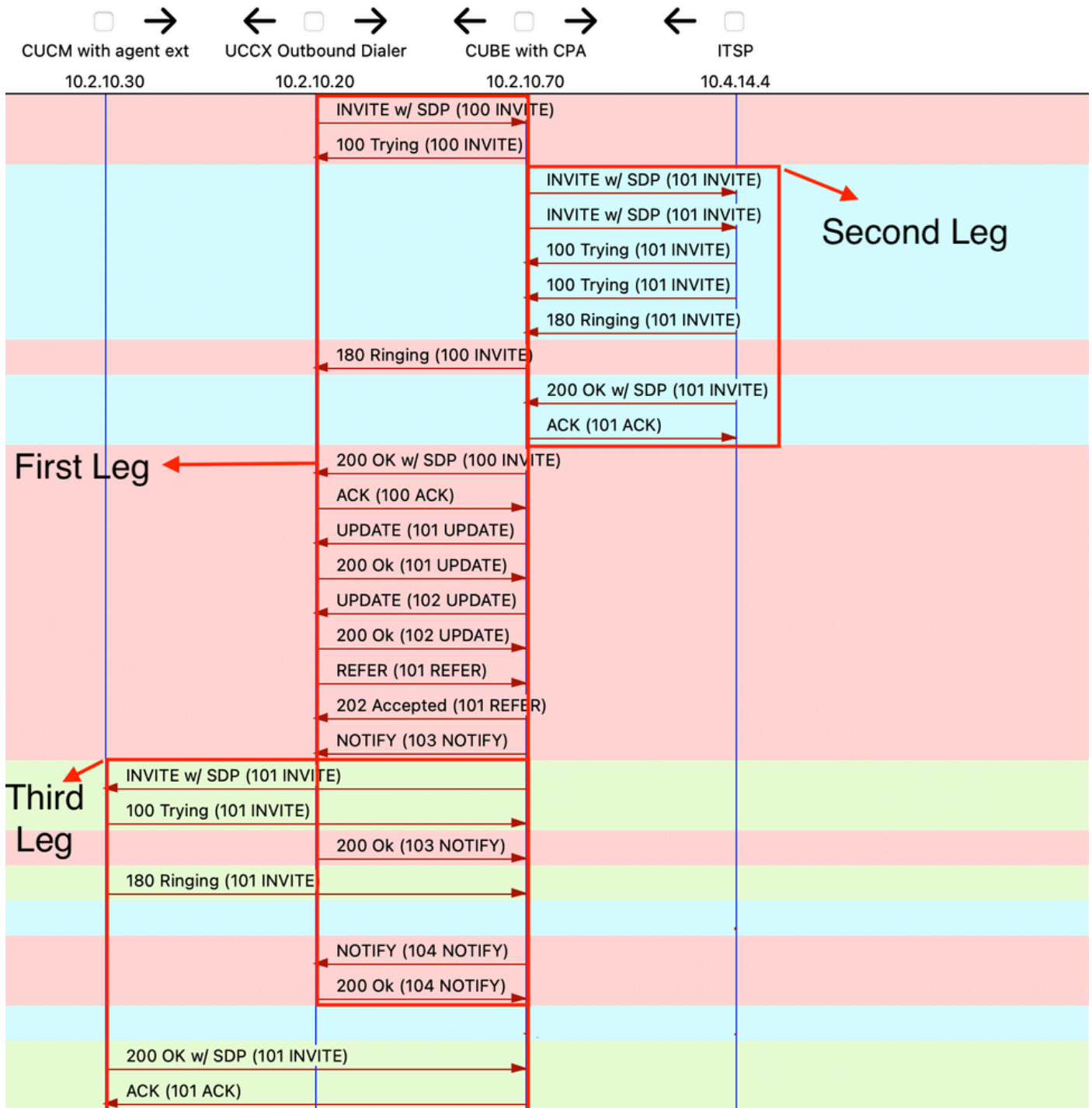
400 <--Second Leg

Outgoing Dial-peer=500

<--Third Leg

There are three legs:

- the first leg comes from UCCX,
- the second leg goes to ITSP,
- and the third leg goes to the CUCM





**Note:** The Analysis described in this section describes only specific segments of the SIP messages that you need to troubleshoot.

---

On the first leg, it is important to check that CPA is sent with the correct CPA parameters configured on UCCX on the SIP Invite message:

```
<#root>
```

```
---Output omitted
```

```
--unique_boundary  
Content-Type: application/
```

```
x-cisco-cpa
```

```
Content-Disposition: signal;handling=optional  
Events=FT,Asm,AsmT,Sit  
CPAMinSilencePeriod=375  
CPAAnalysisPeriod=2500  
CPAMaxTimeAnalysis=3000
```



```
CPAMinValidSpeechTime=112
CPAMaxTermToneAnalysis=15000
--unique_boundary--

---Output omitted
```

The 200 ok SIP message on the first leg also needs to say that the CPA is enabled:

```
<#root>

---Output omitted

--uniqueBoundary
Content-Type: application/
x-cisco-cpa

Content-Disposition: signal;handling=optional
event=enabled                <--This must be enabled for CPA

--uniqueBoundary--
```

The first Update SIP message on the first leg indicates that the CPA event has been detected:

```
<#root>

---Output omitted

Content-Type: application/
x-cisco-cpa

Content-Disposition: signal;handling=optional
Content-Length: 26
event=detected

status=

CpaS
```

The second Update SIP message also on the first leg indicates that the CPA event is Live Human Speech:

```
<#root>

---Output omitted

Content-Type: application/
```

**x-cisco-cpa**

Content-Disposition: signal;handling=optional  
Content-Length: 154

**event=detected**

**status=LS**

<-- This indicates it is Human speech  
pickupT=2510  
maxActGlitchT=0  
numActGlitch=0  
valSpeechT=190  
maxPSSGlitchT=0  
numPSSGlitch=0  
silenceP=380  
termToneDetT=0  
noiseTH=35  
actTh=2097164

The Refer SIP message on first leg indicates where to send the call to on the Refer-To header:

Refer-To: <sip:2000@10.2.10.70>



**Note:** Just in case the issue persists, open a Cisco TAC Case, and attach the CUBE logs collected for further troubleshooting along with sh tech of your CUBE. For the UCCX side, you need to collect UCCX Engine traces and Finesse agent side logs.

---

## Related Information

[Understand Inbound/Outbound Dial Peers that Match on Cisco IOS® Platforms](#)

[Call Progress Analysis Overview](#)

[Tech Note on UCCX Tracing Levels](#)

[Cisco Unified Contact Center Express Design Guide](#)