

APPLICATION NOTES

PRODUCTS SUPPORTED:
ClearOne CONVERGE® Pro 2 and
ShoreTel Connect ONSITE

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CONFIGURING CONVERGE Pro 2
WITH SHORETEL CONNECT ONSITE

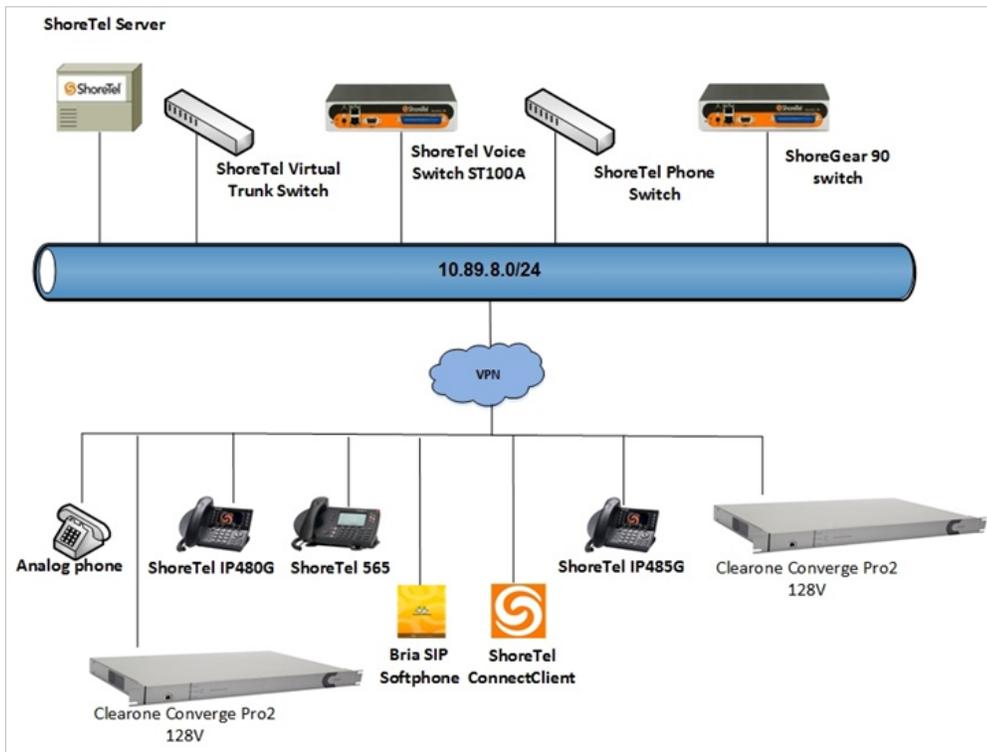
Overview

This application note describes the configuration steps required to integrate ClearOne Converge Pro 2 (CP2) with the ShoreTel Connect ONSITE system for SIP-based VoIP application.

NOTE: Though the app note refers to the CP2 128V, which was used for testing, the information it contains applies to the following CP2 models: 128V, 128VD, and 48V.

Network Topology

The following diagram shows a sample network topology used to test compatibility between ShoreTel Connect ONSITE and CP2:



Configuration Notes

The following considerations must be taken when implementing ClearOne CP2 as SIP Extensions on the ShoreTel Connect ONSITE system.

ShoreTel Extension License

Extension Licenses are required for each ClearOne CP2.

ShoreTel SIP Phone License

Deployment of SIP Extensions require a SIP Phone License. One SIP Phone License is required for each ClearOne CP2 SIP Extension.

NOTE: For additional information on SIP Endpoints with a ShoreTel Connect ONSITE system, please refer to Chapter 19 of the ShoreTel Connect Onsite System Administration Guide.

Configure ShoreTel System

This section describes the detailed steps required on the ShoreTel Connect ONSITE system to configure ClearOne CP2 128V as SIP extensions.

Users

1. First add a User to the ShoreTel System in the Users section of the Administration software.
2. In ShoreTel Director, navigate to Administration > Users > Individual User.
3. In the drop down box next to Add New User at Site, select the Site where you will add the new user and then click Go.
4. Once the user is created, write down the Extension Number from Users page, and the Client Username and SIP Password that you create on the continued Users page shown after since they will be used to configure the CONVERGE Pro 2 128V.

NOTE: There is no default SIP password although it appears masked in the password text box.

You will also need the IP Address of the ShoreTel Proxy switch; these will be needed later for configuring the CP2 128V extension in SIP Properties. The screen shots shown below are using a default User configuration. A new SIP profile will need to be created separately on the ShoreTel server with 2 additional options explained below.

The User setup shown below shows License Type: Extension and Mailbox and also requires one ShoreTel SIP Phone license for the 128V and one Extension and Mailbox license for the extension. If Extension only is selected in the User setup, then an Extension only license is required for each CP2 128V unit added to the ShoreTel system, as shown below:

GENERAL	TELEPHONY	VOICE MAIL	ROUTING	MEMBERSHIP	APPLICATIONS
First name:	<input type="text" value="clearone user1"/>				
Last name:	<input type="text"/>				
Extension:	<input type="text" value="194"/>				SHOW REFERENCES
Email address:	<input type="text" value="c@incontact"/>				Edit System Directory record
Client username:	<input type="text" value="clearoneuser1"/>				
<input checked="" type="checkbox"/> Include in System Dial by Name directory					
<input type="checkbox"/> Make extension private					

DID Settings:	(not configured)	change settings...
PSTN failover:	<input type="text" value="None"/>	
Caller ID (overwrite DID):	<input type="text"/>	(e.g. +1 (408) 331-3300)
License type:	<input type="text" value="Extension and Mailbox"/>	
Access license:	<input type="text" value="Connect Client"/>	
User group:	<input type="text" value="Executives"/>	Go to this user group
Site:	<input type="text" value="Headquarters"/>	Go to this site
Language:	<input type="text" value="English(US)"/>	

Current port:	<input type="text" value="SIP-194-0131444090723248462"/>	<input type="button" value="GO PRIMARY PHONE"/>
Jack #:	<input type="text"/>	
Mailbox server:	<input type="text" value="Headquarters"/>	
Client password:	<input type="password" value="....."/> <input type="password" value="....."/>	(6 - 26 characters)
	<input type="checkbox"/> must change on next login	
SIP phone password:	<input type="password" value="....."/> <input type="password" value="....."/>	(6 - 26 characters)

Once you've defined the user for the CP2 128V extension, be sure that enough IP Phone resources and SIP Proxy resources are allocated to support the total number of CP2 128V phones that you will be adding to the system. To confirm, go to Administration > Voice Switches/Service Appliances > Primary.

Call Control Options

The CP2 128V was tested using the call control settings shown below with no issues.

This section describes the SIP settings required on the ShoreTel system to work with CP2 128V. This is accomplished from ShoreTel Connect Director.

1. Navigate to Administration > Features > Call Control > Options
2. Verify the parameters located under the SIP section
3. Realm: The realm is used in authenticating all SIP devices. Changing this value will require a reboot of switches serving as SIP extensions. It is not necessary to modify this parameter
4. Enable SIP Session Timer: Ensure this parameter is checked
5. Session interval: Session interval value indicates the SIP session registration period. There is no need to modify the default value of 1800 seconds.
6. Refresher: The refresher setting decides if user agent client or user agent server refreshes the session. There is no need to modify the default value of "Caller (UAC)."
7. Click SAVE

Call Control Options	
General:	
<input type="checkbox"/>	Use Distributed Routing Service for call routing
<input type="checkbox"/>	Enable monitor / record warning tone
<input type="checkbox"/>	Enable Silent Coach warning tone
<input checked="" type="checkbox"/>	Enable My Hold LED indication
<input type="checkbox"/>	Enable My Hold reminder rings
<input checked="" type="checkbox"/>	Enable BCA caller ID
<input checked="" type="checkbox"/>	Generate an event when a trunk is in-use for: <input type="text" value="240"/> minutes (1-1440)
<input checked="" type="checkbox"/>	Park timeout after: <input type="text" value="60"/> seconds (1-100000)
<input checked="" type="checkbox"/>	Hang up Make Me conference after silence for: <input type="text" value="20"/> minutes (1-999999) <input type="button" value="?"/>
<input type="checkbox"/>	Overhead paging timeout: <input type="text" value="0"/> seconds (1-999999)
	Delay before sending DTMF to fax server: <input type="text" value="2000"/> milliseconds (0-60000)
	DTMF/RFC-2833 payload type: <input type="text" value="101"/> (96-127)
SIP:	
	Realm: <input type="text" value="ShoreTel"/>
<input checked="" type="checkbox"/>	Enable session timer
	Session interval: <input type="text" value="1800"/> seconds (90-3600)
	Refresher: <input type="text" value="Caller (UAC)"/>

Voice encoding and quality of service:

Maximum inter site-jitter buffer: milliseconds (20-400)

DiffServ / ToS byte (0-255): (0-255) (DSCP = 0x2e)

Media encryption: ▼

Admission control algorithm assumes RTP header compression is being used

Remote IP phone codec list: ▼

Call control quality of service:

DiffServ / ToS byte (0-255): (0-255) (DSCP = 0x18)

Video quality of service:

DiffServ / ToS byte (0-255): (0-255) (DSCP = 0x22)

Trunk-to-Trunk transfer and tandem trunks:

Hang up after silence of: minutes (1-1440)

Hang up after: minutes (60-1440)

SIP Profile

This section describes the SIP settings required on the ShoreTel system to work with ClearOne CP2 128V. This is accomplished from ShoreTel Connect Director.

The SIP Profile is created in the IP Phones > SIP Profiles section and requires 2 custom parameters.

1. Click New to add a profile
2. Define a Name for the profile
3. In the User Agent text box type ClearOne CONVERGE Pro 2 128V, as an example
4. Priority will default to 100 (No change is needed here)
5. Check the Enable checkbox
6. In the Custom Parameters text box
 - a. AddGracePeriod=1800
 - b. DelayUnregister=15
7. Click Save to apply your changes.

NOTE: This will eliminate any possible race conditions that can lead to the CP2 128V not being properly registered to the ShoreTel Server causing calls to fail.

The screenshot shows the ShoreTel Connect Director interface. On the left is a navigation tree with 'SIP Profiles' selected. The main area shows the configuration for a profile named 'Clearone Pro 2 128V'. The 'Name' field is 'Clearone Pro 2 128V', the 'User agent' is 'Converge Pro 2 Phone', and the 'Priority' is '100'. The 'System parameters' field contains a list of parameters: OptionsPing=0, SendEarlyMedia=0, MWI=none, ICodecAnswer=1, StripVideoCodec=0. The 'Custom parameters' field is circled in orange and contains the text: AddGracePeriod=1800 and DelayUnregister=15.

Site Settings

In the Site Settings page confirm that the CP2 128V is configured to register to the Primary Switch 1 and not the Virtual IP Address.

Headquarters
GENERAL NIGHT BELL CALL HANDLING SERVERS

Name:

Service Appliance Conference backup site:

Language:

Country / area:

Time zone:

Parent:

Use parent site for emergency calls and other calls when no local trunks are available

Local area code: *must be 3 digits*

Emergency number list:

[Add](#)

Trunk access code required

Caller's emergency service identification (CESID): (e.g. +1 (408) 331-3300)

Operator extension:

Fax redirect extension:

Admission control bandwidth: kbps

Intra-site calls:

Inter-site calls:

Fax and modem calls:

Virtual IP address:

Proxy switch 1:

Proxy switch 2:

SMTP relay server:

Network time protocol server:

Configure a ClearOne CP2 128V IP Phone as a SIP Extension

This section describes the steps required to configure a ClearOne CP2 128V IP Phone as SIP Extension on the ShoreTel system. This is accomplished from ShoreTel Connect Director.

1. Navigate to Administration > Users > Users
2. Click New, to create a new user
3. Define the First name: and Last name: Enter the appropriate user information
4. Define an Extension: ShoreTel Connect Director will automatically assign the next available extension number, but it can also be modified to any available extension number
5. Define the License type: and Access license: In our example, Extension and Mailbox was selected for this test and Connect Client for Access license

NOTE: If the License type is configured as Extension-Only, then Any IP Phone cannot be selected, but instead must be set to SoftSwitch.

GENERAL	TELEPHONY	VOICE MAIL	ROUTING	MEMBERSHIP	APPLICATIONS	DNIS
First name:	<input type="text" value="clearone user1"/>	Last name:	<input type="text"/>			
Extension:	<input type="text" value="194"/>	SHOW REFERENCES				
Email address:	<input type="text" value="c@incontact"/>	Edit System Directory record				
Client username:	<input type="text" value="clearoneuser1"/>					
<input checked="" type="checkbox"/> Include in System Dial by Name directory						
<input type="checkbox"/> Make extension private						
DID Settings:	<i>(not configured)</i>		change settings...			
PSTN fallback:	<input type="text" value="None"/>					

License type:	<input type="text" value="Extension and Mailbox"/>					
Access license:	<input type="text" value="Connect Client"/>					
User group:	<input type="text" value="Executives"/>	Go to this user group				
Site:	<input type="text" value="Headquarters"/>	Go to this site				
Language:	<input type="text" value="English(US)"/>					
Primary phone port:	IP phone: SIP-194-0131444090723248462 change settings...					
Current port:	<input type="text" value="SIP-194-0131444090723248462"/>				<input type="button" value="GO PRIMARY PHONE"/>	
Jack #:	<input type="text"/>					

- Define a SIP phone password: There is no default SIP phone password configured, it is masked with the appearance that there is a default password, and must be defined by the ShoreTel Director Administrator. Make certain to type the password in both fields.
- Click SAVE.

Mailbox server:	<input type="text" value="Headquarters"/>					
Client password:	<input type="password" value="....."/>				<i>(6 - 26 characters)</i>	
	<input type="password" value="....."/>					
	<input type="checkbox"/> must change on next login					
SIP phone password:	<input type="password" value="....."/>				<i>(6 - 26 characters)</i>	
	<input type="password" value="....."/>					

Configure ClearOne Converge Pro 2

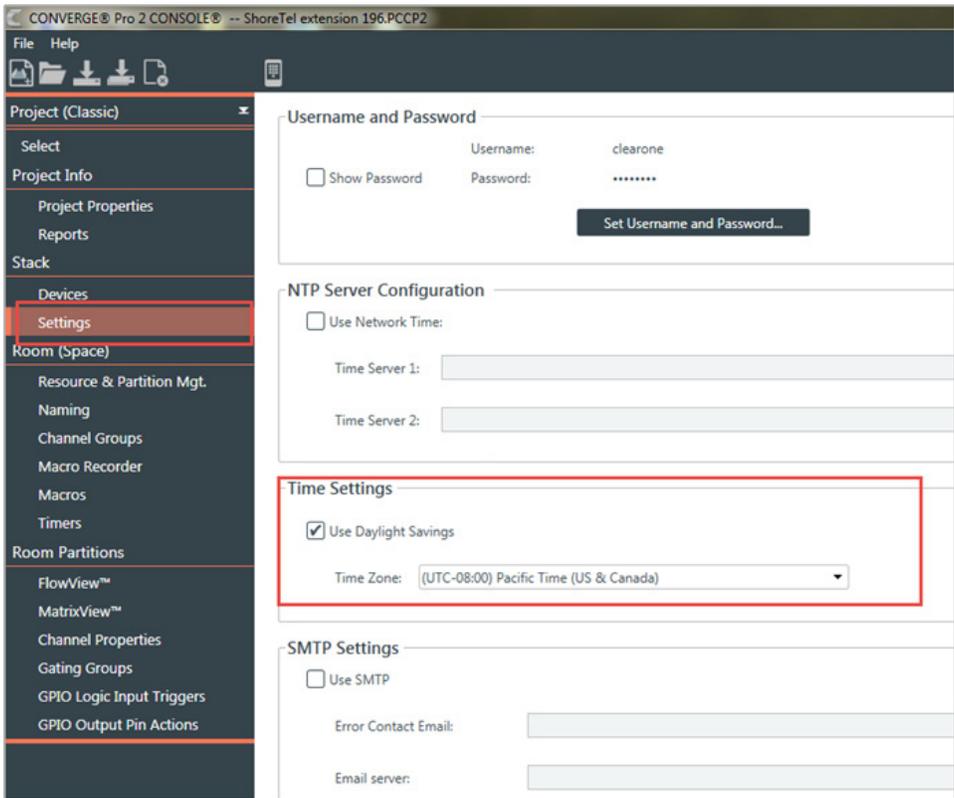
The following steps detail the configuration process using the ClearOne CP2 128V to register as SIP extensions onto a ShoreTel Connect Onsite system. CP2 128V is configured using the Converge Pro 2 CONSOLE.

Refer to the *CONVERGE Pro 2 CONSOLE User Manual* for more detailed information on configuring ClearOne CP2 using the CONSOLE application.

Configure the Date and Time Parameters

This section describes the steps required to configure the Date and Time parameters on the ClearOne CP2 128V.

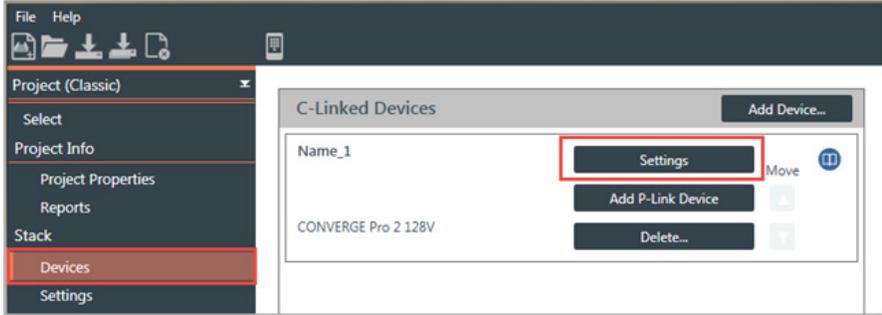
- Select the Project data which we will upload to the Device and navigate to the Setting as shown below
- Set the Date and Time by selecting Time Settings from Settings of Console Window of the menu bar
- Select the time from the Time zone drop down box for time Display Format, Time Synchronization
- The Display Format parameters were not modified from their default values



SIP Line Parameters Configuration

This section describes the steps required to configure the SIP Line parameters on the CONVERGE Pro 2 128V.

1. Set the SIP Line parameters by selecting Devices > Settings



2. Set the Device Settings, i.e., VoIP Stack and VoIP Phones, as shown below:

General GPIO **VoIP Stack** VoIP Phones

Network Timers Audio **Proxy 1** Proxy 2

The Settings below are GLOBAL to all devices in the stack!

TCP Port

UDP Port

User Domain

Registrar Address

Registrar Port

Outbound Proxy Address

Outbound Proxy Port

Transport Type

OBP Enable

General GPIO VoIP Stack **VoIP Phones**

The Settings below are for each VoIP phone found on the device. Additional VoIP licences may be required.

Phone 1 Phone 2

Phone Properties

Phone Number

Name / Label

UA Enable

Proxy 1

User Name

Password

Reenter Password

Transport Type

Proxy 2

User Name

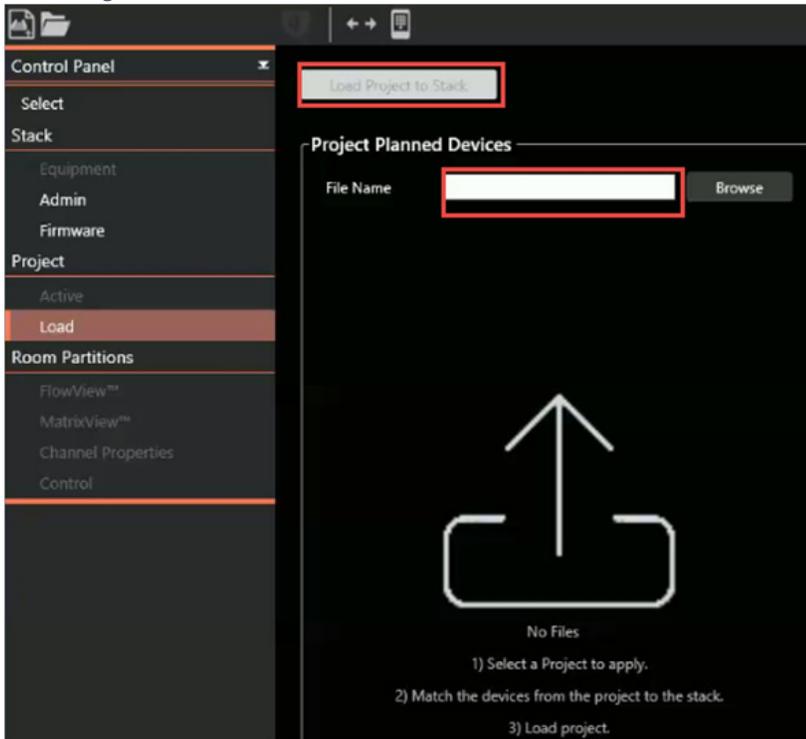
Password

Reenter Password

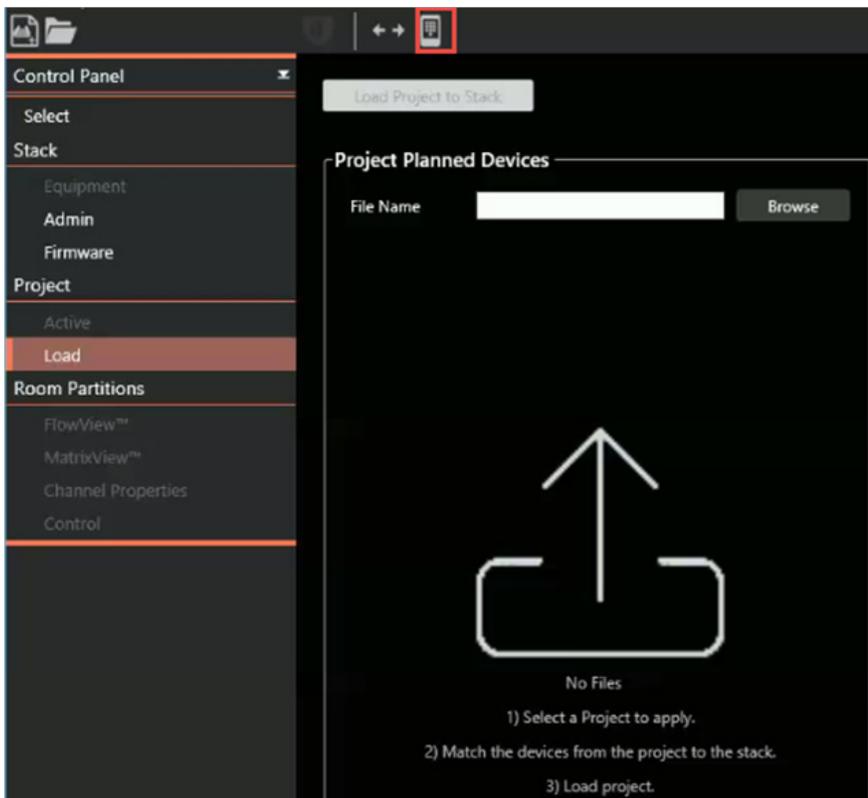
Transport Type

3. Under Local Settings, ensure the parameter SIP Protocol is set to Enable
4. Set the parameter UDP Port to 5060
5. Under the heading VoIP Stack, enter the IP Address of the ShoreTel Proxy Server switch. In our example the ShoreTel Proxy switch IP Address is "10.89.8.4". The ShoreTel Proxy switch was provisioned earlier with the ShoreTel Connect Director, under Administration > System > Sites.
6. Enter the ShoreTel Proxy IP address in the Registrar and Outbound Proxy fields
7. Set the parameter Port to 5060
8. Click Close
9. Save the configuration which have made for the CONVERGE Pro 2 128V and save the config file on any local machine
10. Click Save as on the CONVERGE Pro 2 Console to Export the configuration and save on the Local machine which can be used later

11. Now load the config file by selecting the config file on the Project Planned Devices to the Box to get the Devices to register with extensions defined



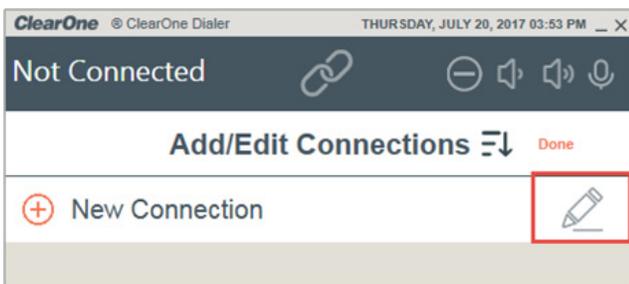
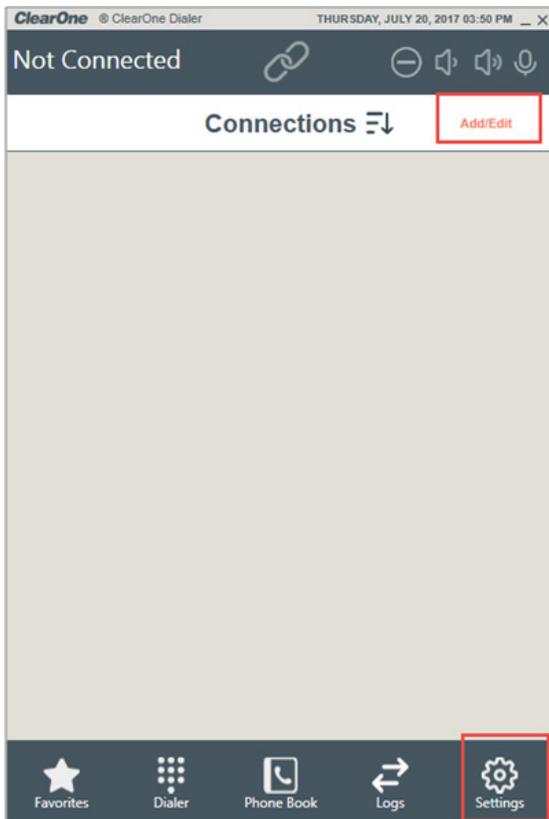
12. One the Device is loaded with the config files click on the Phone Icon on the CONVERGE Pro 2 Console to open up the Dialer Application to get the Application connected with the extension that are defined in the CONVERGE Pro 2 as shown below.



13. To get the Dialer Application connected Click on the Settings Icon on the application

14. Click the Add/Edit Icon to Add the Connection. It will create a New connection tab to enter the details of the

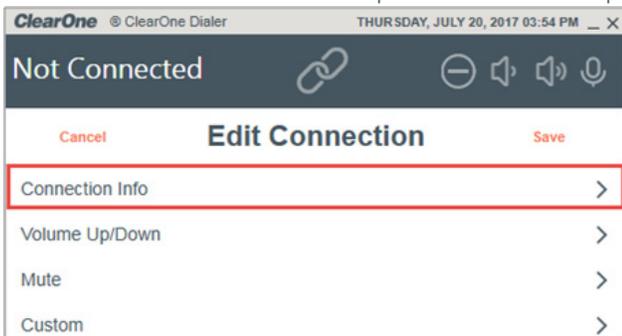
extensions.



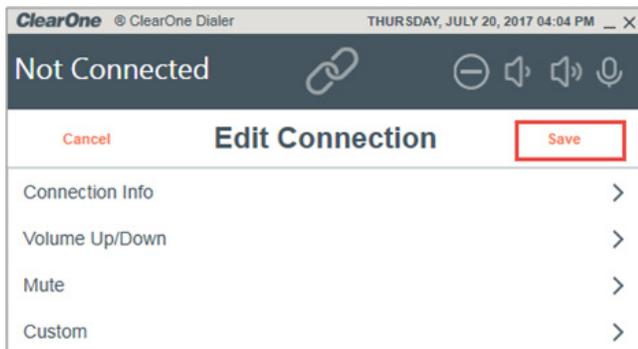
15. Click the Connection Info menu

16. Enter the Details of the Extension and IP of the CONVERGE Pro 2 and Label info

17. Click the Back Icon on the top left corner of the application



18. Click Save on the Edit connection info page to save the settings



19. Click the Done Icon to complete the setup

20. Click the Connection icon to connect the application with the extension that are defined in the CONVERGE Pro 2

NOTE: The operations are handled by the application but the Audio is audible using whatever output is defined in the CONVERGE Pro 2 CONSOLE application.

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