CyberData
The IP Endpoint Company

Zoom Configuration Guide: SIP Paging Server

Document Part # 931807A

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Revision Information

- 9-11-2020 Initial Release

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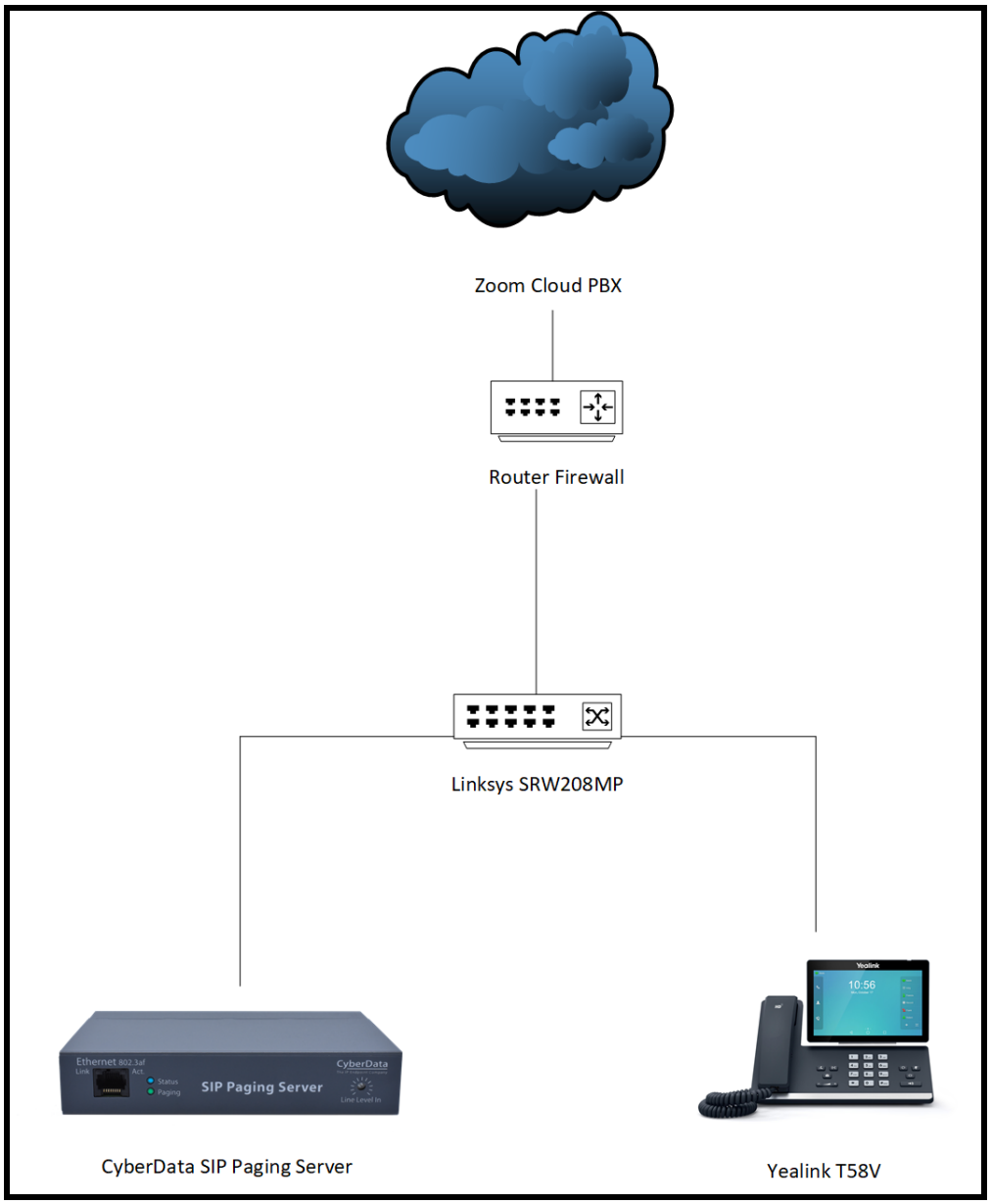


2.0 Test Setup Equipment

This section describes the products used for interoperability testing with Zoom.

Table 2-1: Setup Equipment

EQUIPMENT	MODEL or PART NUMBER	FIRMWARE VERSION
CYBERDATA SIP PAGING SERVER	011146	v12.2.0
YEALINK	T58A	58.83.3.6
LINKSYS SWITCH	SRW208MP	---

3.0 Before You Start

This configuration guide documents the integration process of a CyberData SIP Paging Server.

Network Advisories

Zoom uses a Fully Qualified Domain Name (FQDN) for the SIP server and Outbound Proxy addresses. The CyberData SIP Paging Server needs to perform a DNS A query to resolve the IP address of Zoom's Outbound Proxy FQDN. It is necessary to ensure the configured DNS server(s) have an A record for the Outbound Proxy address.

In addition, be sure to verify the following ports are available for the paging server to use:

- TCP 5060-5061, 5091 (SIP)
- UDP 10500 (RTP)

The paging server will need to traverse the public internet in order to operate with Zoom in the cloud.

The paging server's paging extension uses SIP port 5060 to receive SIP messages. The Nightringer extension uses SIP port 5061 to receive SIP messages. Both extensions will send SIP messages to port 5091, the port used by Zoom's Outbound Proxy.

SIP ports 5060-5061 and RTP port 10500 are the default values on all noted firmware levels.

Alternatively, SIP ports for the paging and Nightringer extension are configurable on the **SIP** page of the web interface.

The RTP port setting on the **SIP** page is used for both extensions.

The CyberData Discovery Utility can be used to locate CyberData devices on your network. You may download it from the following web address:
https://www.cyberdata.net/pages/discovery

***Note**: DHCP addressing mode is enabled on default on all noted firmware levels.*

Product Documentation and Utilities
Before you start, download the Operation and Quick Start guides from the paging servers' product webpage:

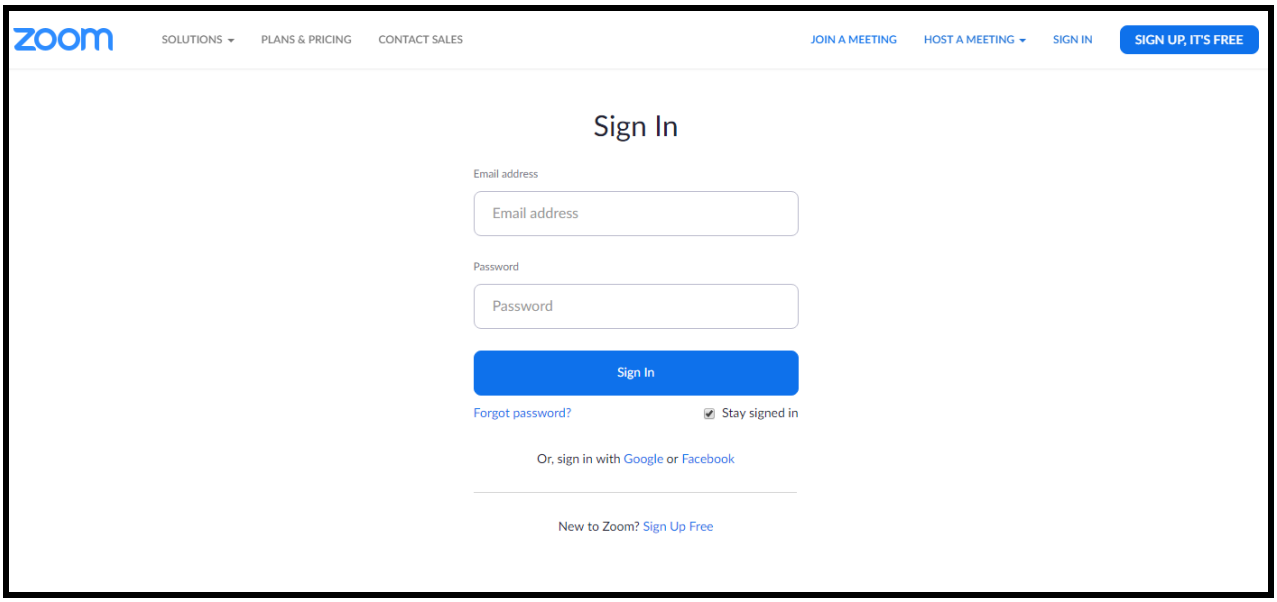
SIP Paging Server (011146)
http://files.cyberdata.net/assets/011146/011146_931073K_SIP_Paging_Server_Operations_Guide.pdf

4.0 Configuration Procedure: Common Area Phone

There are several different extension types that can be used on the Zoom platform.
This guide provides instructions to register the CyberData SIP Paging Server as a Common Area Phone. Registering in a different capacity may require creating a user profile and providing an email address. See Zoom documentation for more details.

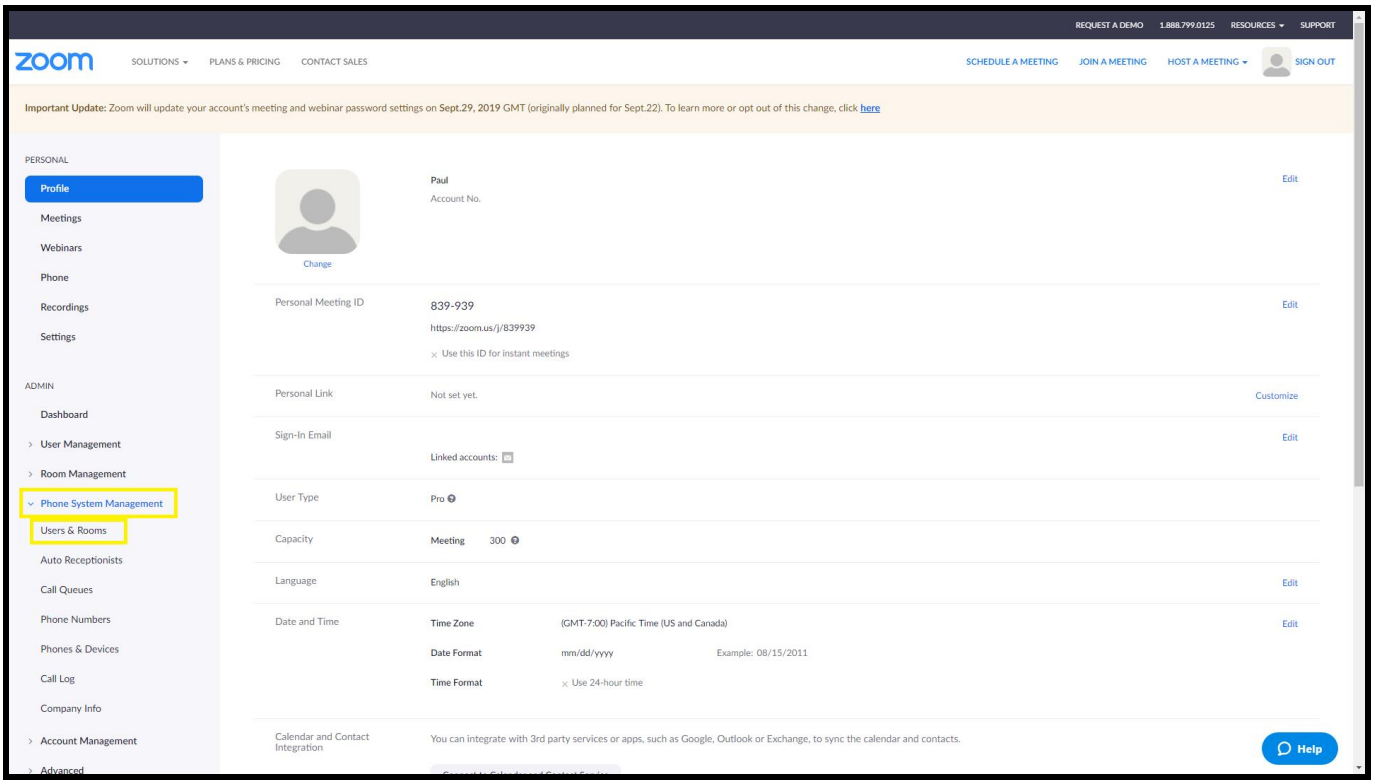
1. Log into Zoom. https://zoom.us/signin

Figure 4-1: Log into Zoom



2. From the Profile page select the "Phone System Management" section and the 'Users & Rooms' subsection.

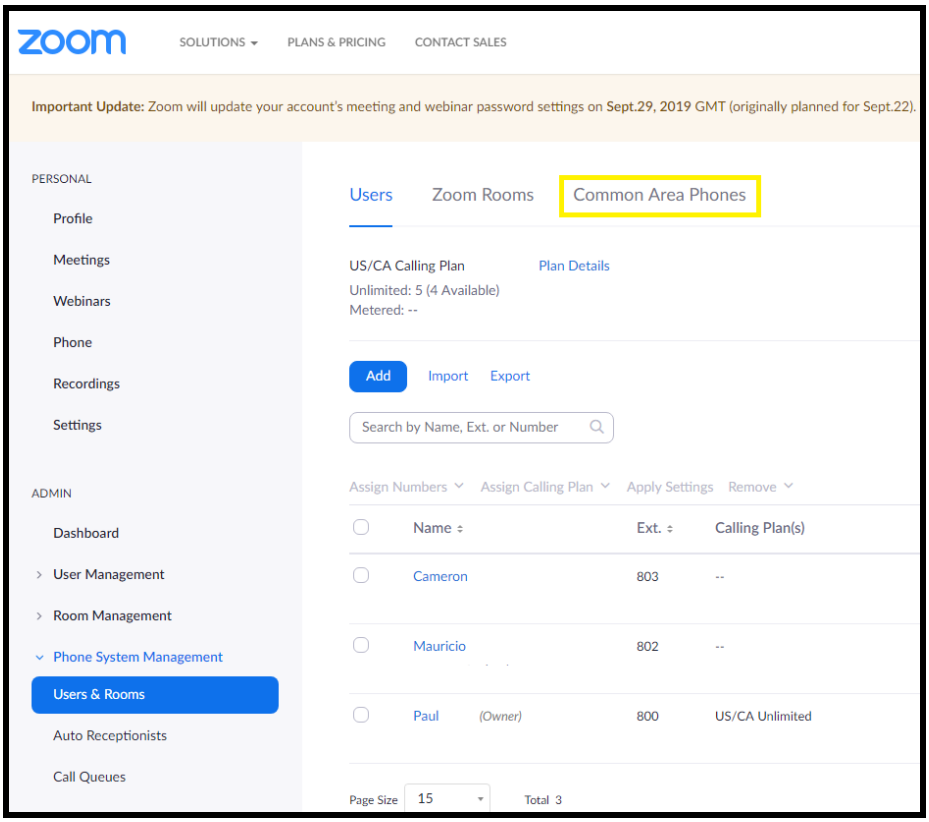
Figure 4-2: Profile Landing Page



Note: Some text from the profile page has been hidden to protect sensitive information.

3. From the "Users & Rooms" page select 'Common Area Phones'.

Figure 4-3: Phone System Management

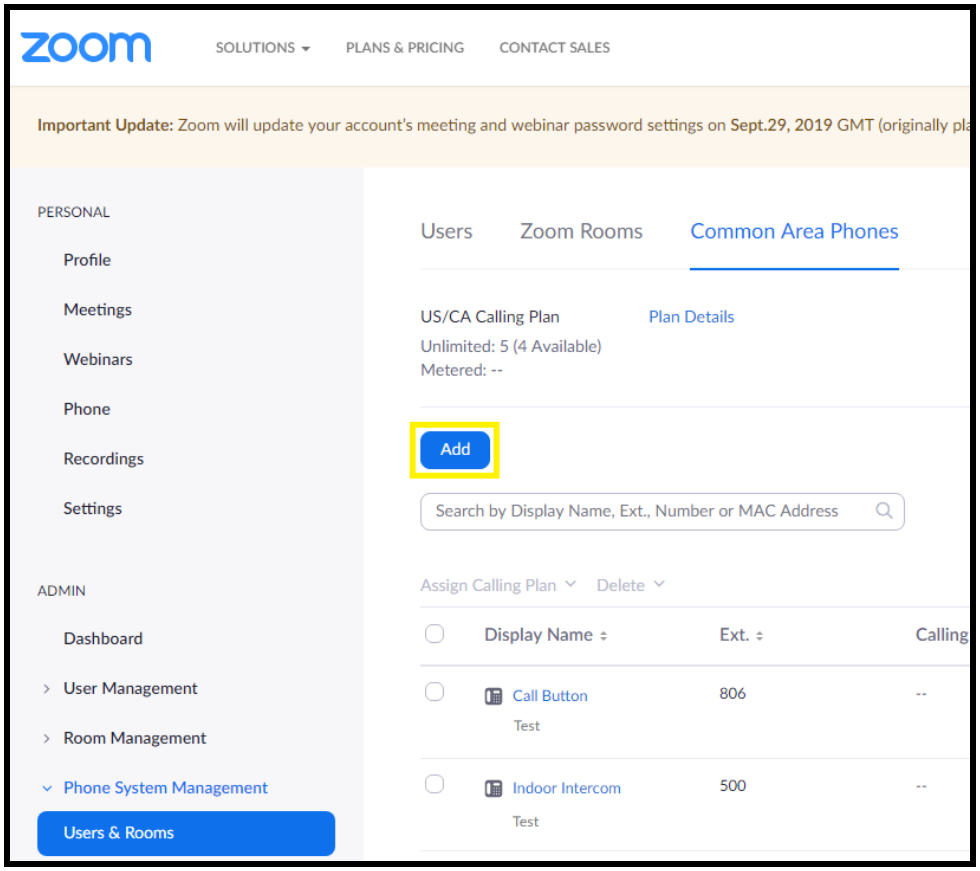


Note: Some text from this page has been hidden to protect sensitive information.

4. From the "Common Area Phones" press the 'Add' Button to create a new common area phone to be used by the device.

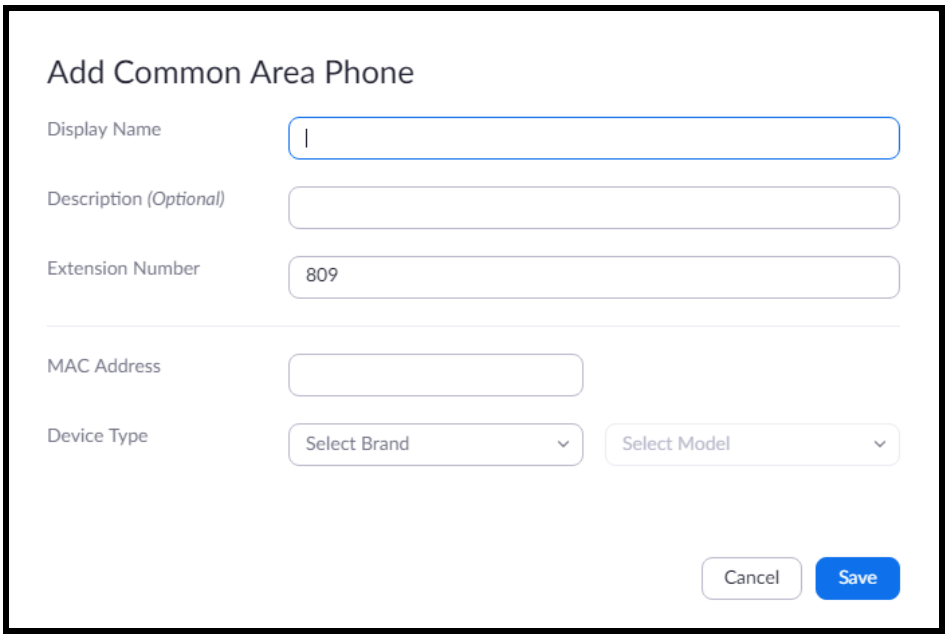
Note: *The MAC address of the paging server will be required to create the common area phone.*

Figure 4-4: Common Area Phones



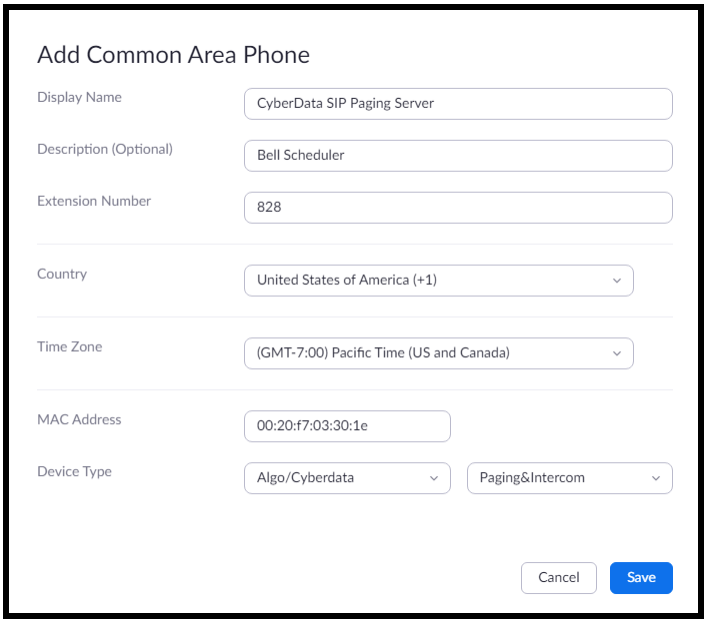
5. After clicking the Add button a Pop-up will appear that allows extension creation.

Figure 4-5: Common Area Phone Pop-up



6. Set the **Display name** of the extension. This will be the main Identifier on the Common Area Phones page.
7. Set the **description**.
8. The **extension number** will be auto generated but can be changed if desired.
9. Set the **MAC address** of the device.

Figure 4-6: Common Area Phone Pop-up – Filled



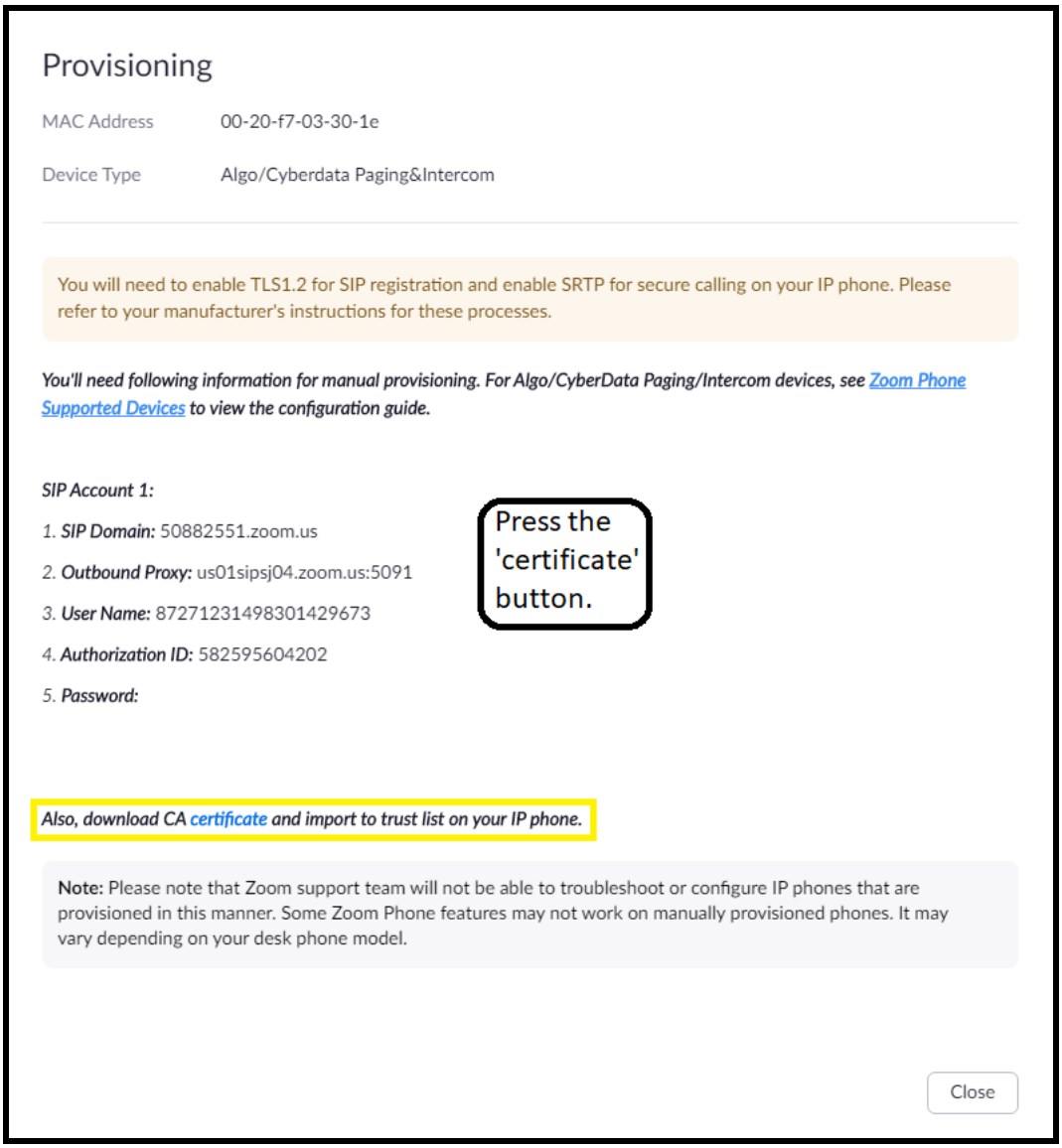
10. Click the **Save** button to create the Common Area Phone.

11. Once created the new extension will appear in the list.

Figure 4-7: Common Area Phone list

12. Press the "Provision" button on the extension that was just created.

Figure 4-7: Provisioning Pop-up



13. A popup will appear with manual provisioning information to setup the CyberData Paging Server. Keep this popup open.

14. Make sure to download the "CA Certificate," which will be needed for device configuration.

5.0 Configuration Procedure: Setting up the Paging Extension

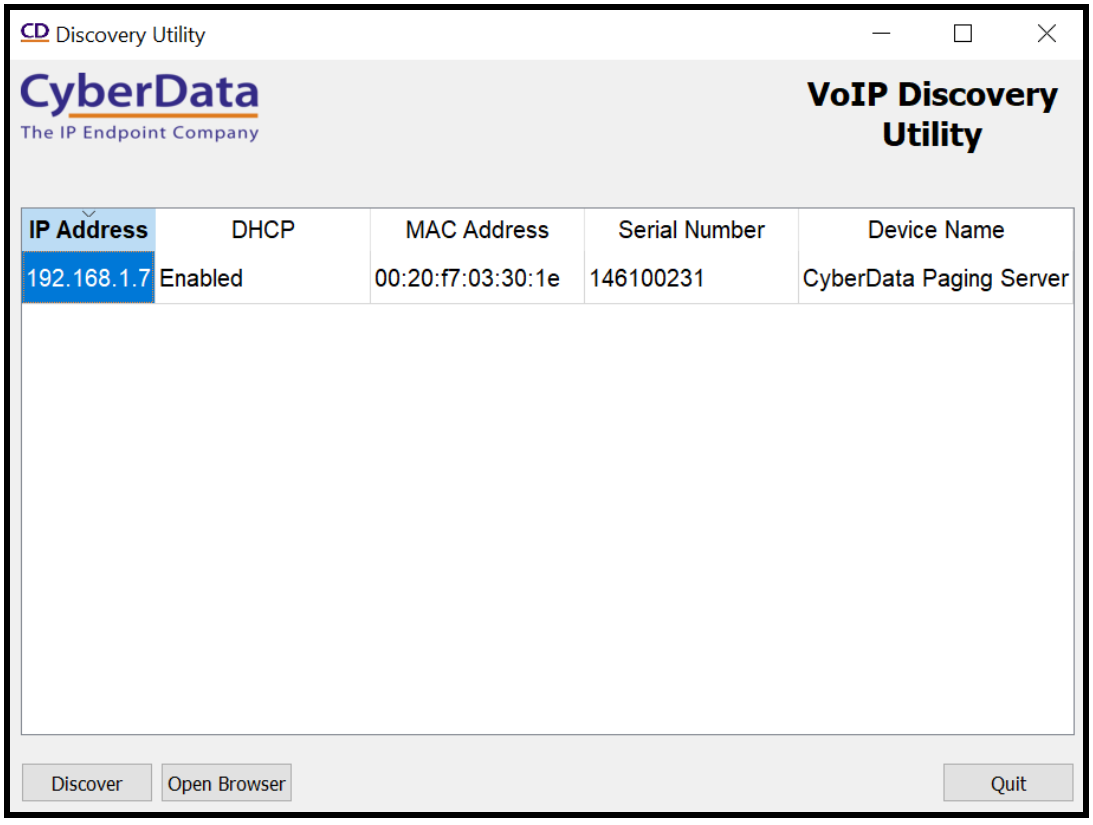
If you are configuring through the web interface, use the following steps to login to the web interface of your CyberData device.

Table 5-1: Setting Name correlation

CyberData Setting	Zoom Provisioning Pop-up
Primary SIP Server	SIP Domain
Outbound Proxy Outbound Proxy Port	Outbound Proxy
Primary SIP User ID	User Name
Primary SIP Auth ID	Authorization ID
Primary SIP Auth Password	Password

1. Click **Open Browser** from the CyberData Discovery Utility or point your browser to the CyberData device's IP address to access the Home Page of the web interface.

Figure 5-1: CyberData Discovery Utility



2. Enter the default credentials when prompted and click the **Log In** button.

Username: admin
Password: admin

Figure 5-2: Web Interface Login

3. From the Home tab press the 'Device' Tab.

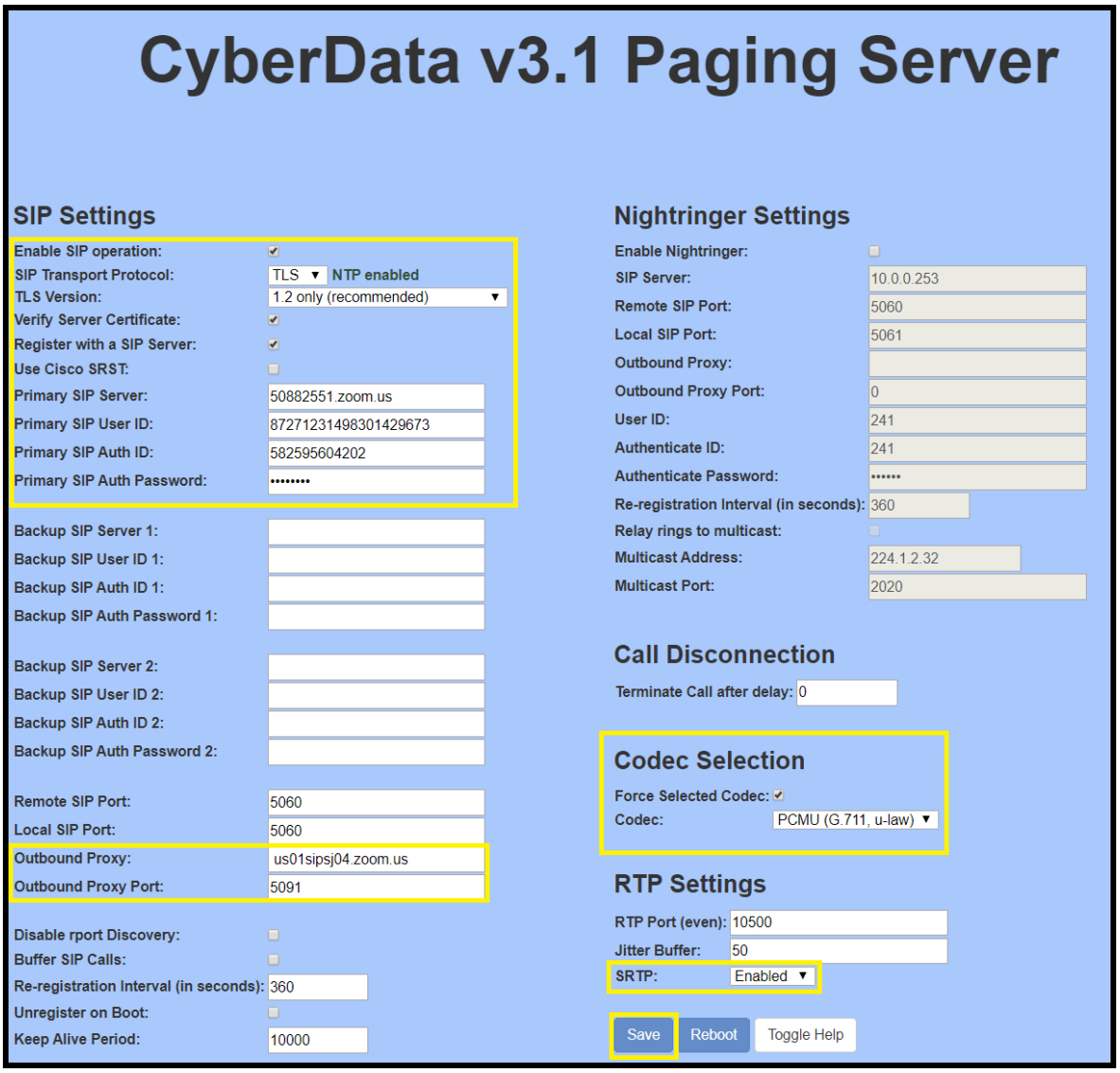
Figure 5-3: Device Tab

1. Check the box for "**Set Time with NTP Server on Boot**".
2. Change the **NTP server** if necessary.
3. Set the **Posix Timezone String** to the local area.

Note: See the operations manual for other time zone strings.

4. Check the box for "**Periodically sync time with server**".
5. Set the "**Time update period (in hours)**" to 1
6. **Save.**
7. Go to the SIP Tab.

Figure 5-4: SIP Tab

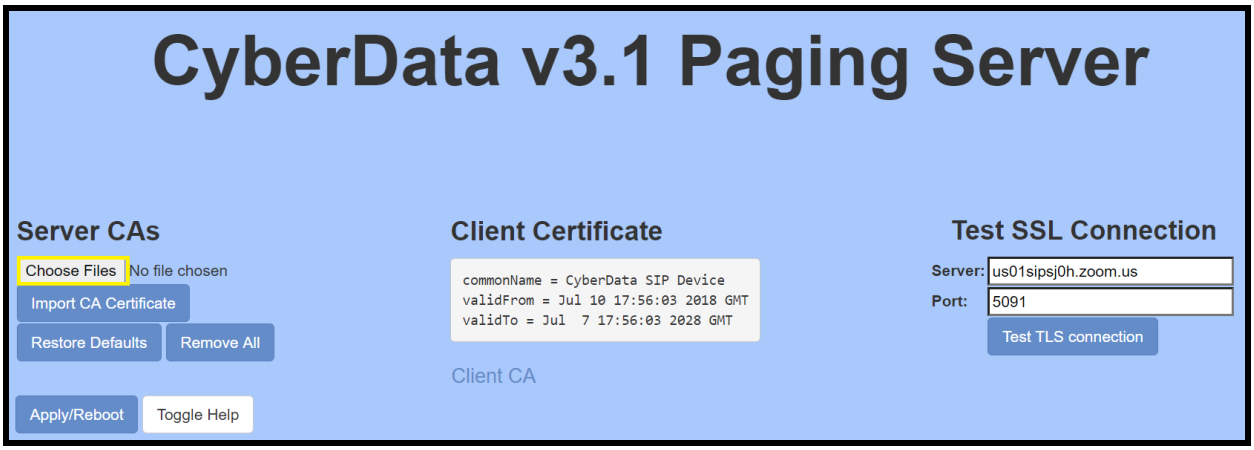


8. Set the 'SIP Transport Protocol' to **TLS**.
9. Keep TLS version set to "**1.2 Only (Recommended)**".
10. Check the box for "**Verify Server Certificate**".
11. Set the **Primary SIP Server** to the SIP Domain from the configuration Popup.
12. Set the **Primary SIP User ID** to the Username from the configuration Popup.
13. Set the **Primary SIP Auth ID** to the Authorization ID from the configuration Popup.
14. Set the **Primary SIP Auth Password** to the password provided in the configuration popup.
15. Set the **Outbound proxy** and **Outbound Proxy port** to the address provided in the configuration popup.

Note: *Make sure to separate the port from the outbound proxy information provided by zoom.*

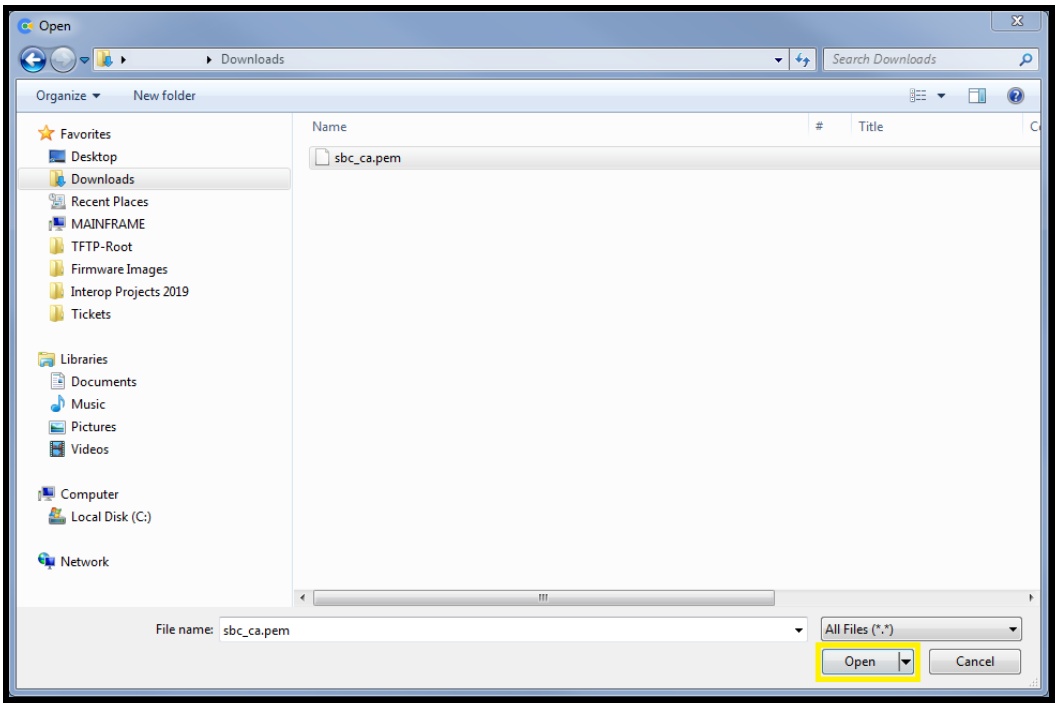
16. Check the box for "**Force Selected Codec**".
17. Set SRTP to **Enabled**.
18. **Save.**
19. Go to the '**SSL**' Tab.

Figure 5-5: SSL Tab



20. Press the 'Choose Files' button.

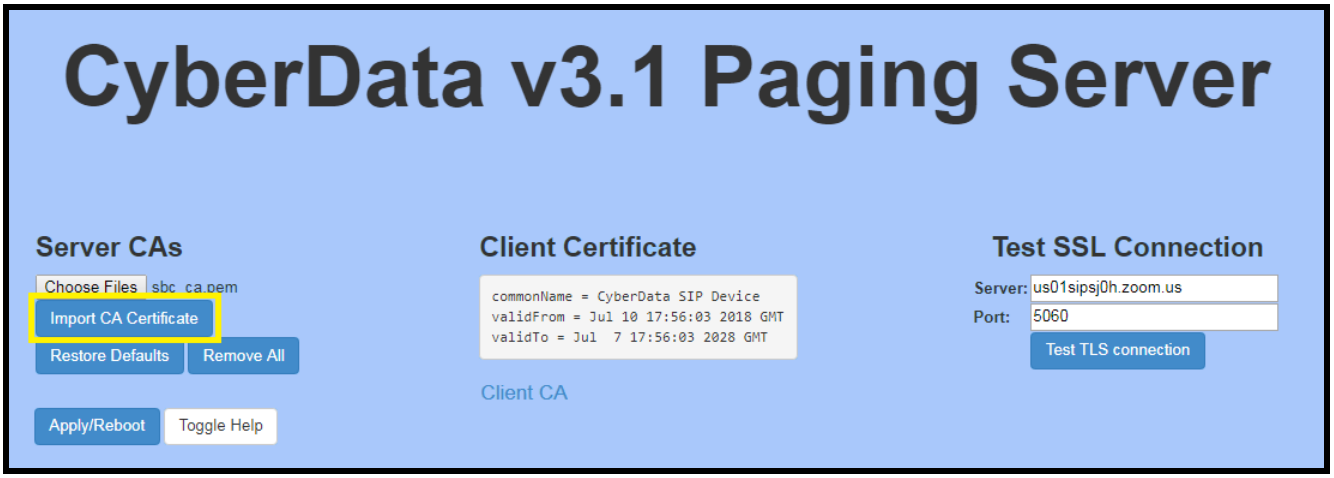
Figure 5-6: Choose file Pop-up



21. Select the "sbc_ca.pem" file and press the Open button.

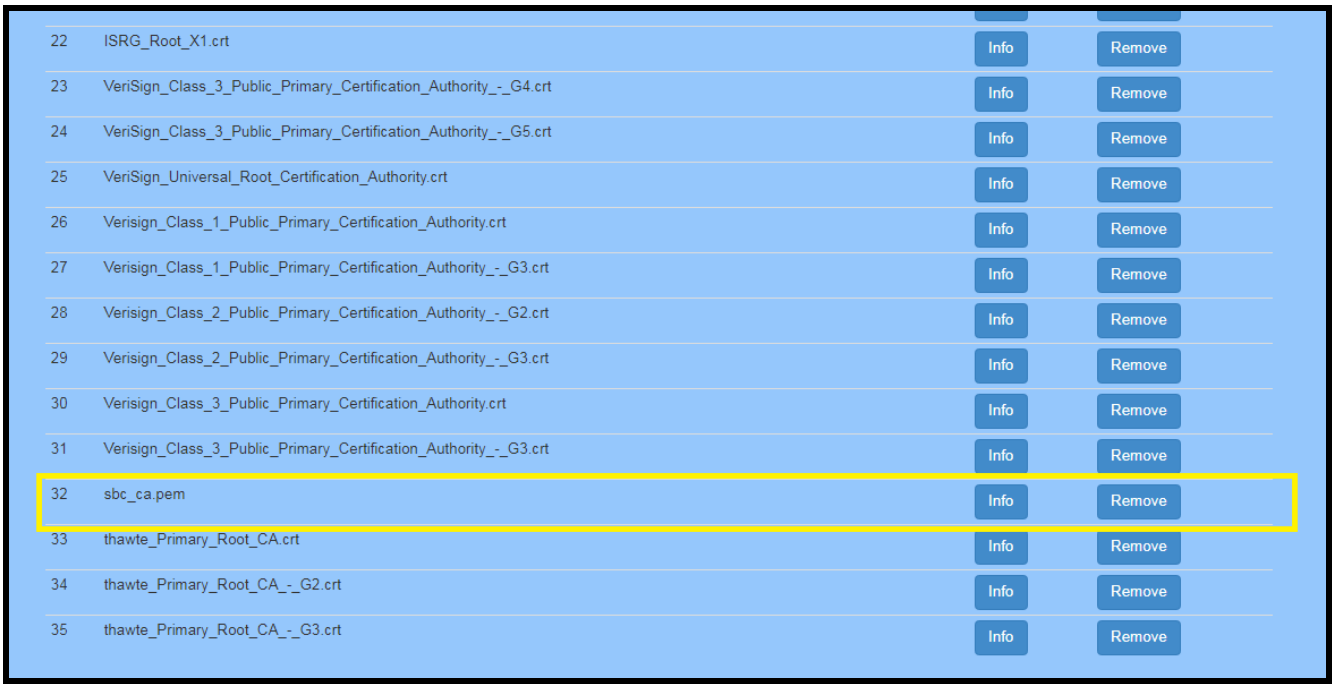
22. Press the "Import CA Certificate" button to load the cert.

Figure 5-7: Import CA Certificate



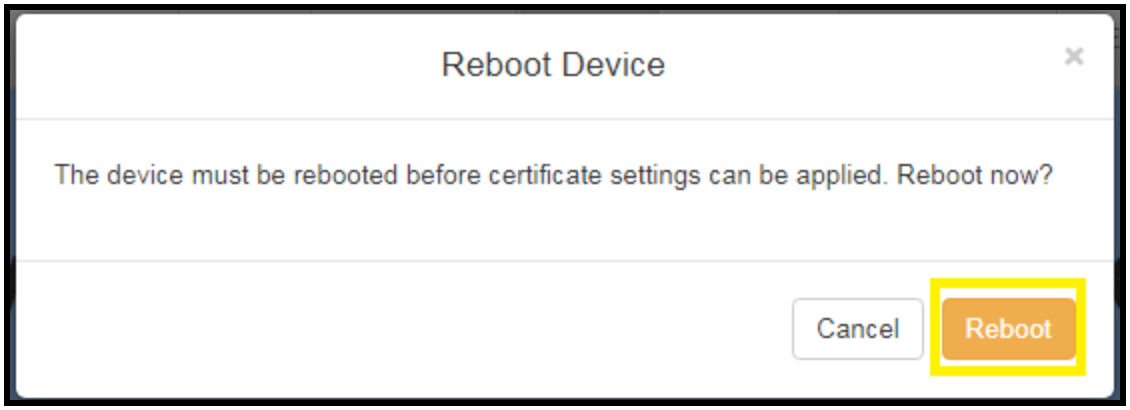
23. Once imported, confirm the file is listed with the other certificates.

Figure 5-8: Certificate List



24. Once the certificate is loaded a reboot will be required to make the changes take effect Use the "Apply/Reboot Button.
25. Click Reboot in the Popup.

Figure 5-9: Apply/Reboot Popup



Once rebooted, "Registered" will appear in green on the Home page.

Figure 5-10: Home page – Registered

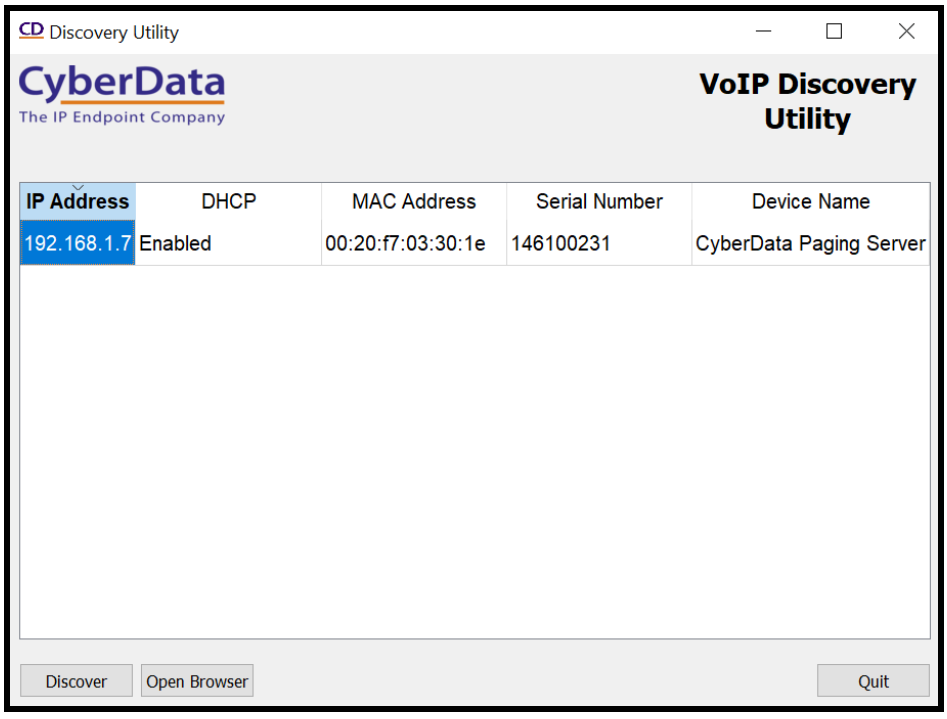
6.0 Configuration Procedure: Setting up the Nightringer extension

Table 6-1: Setting Name correlation

CyberData Setting	Zoom Provisioning Pop-up
SIP Server	SIP Domain
Outbound Proxy Outbound Proxy Port	Outbound Proxy
User ID	User Name
Authenticate ID	Authorization ID
Authenticate Password	Password

1. Click **Launch Browser** from the CyberData Discovery Utility or point your browser to the CyberData device's IP address to access the Home Page of the web interface.

Figure 5-1: CyberData Discovery Utility



2. Enter the default credentials when prompted and click the **Log In** button.

Username: admin
Password: admin

Figure 5-2: Web Interface Login

3. From the Home tab press the 'Device' Tab.

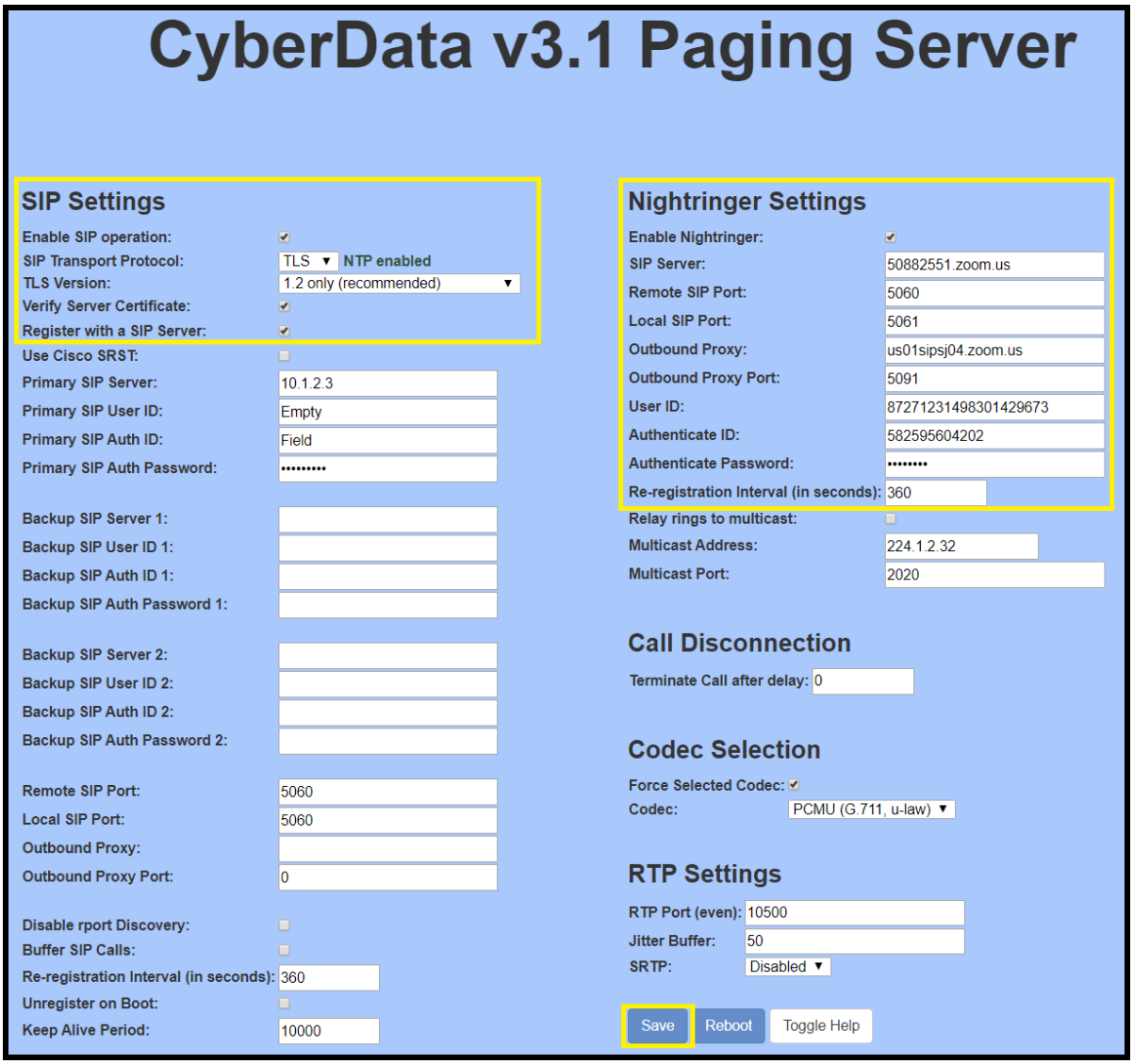
Figure 5-3: Device Tab

4. Check the box for "**Set Time with NTP Server on Boot**".
5. Change the **NTP server** if necessary.
6. Set the **Posix Timezone String** to the local area.

Note: *See the operations manual for other time zone strings.*

7. Check the box for "**Periodically sync time with server**".
8. Set the "**Time update period (in hours)**" to 1.
9. **Save.**
10. Go to the SIP Tab.

Figure 5-4: SIP Tab

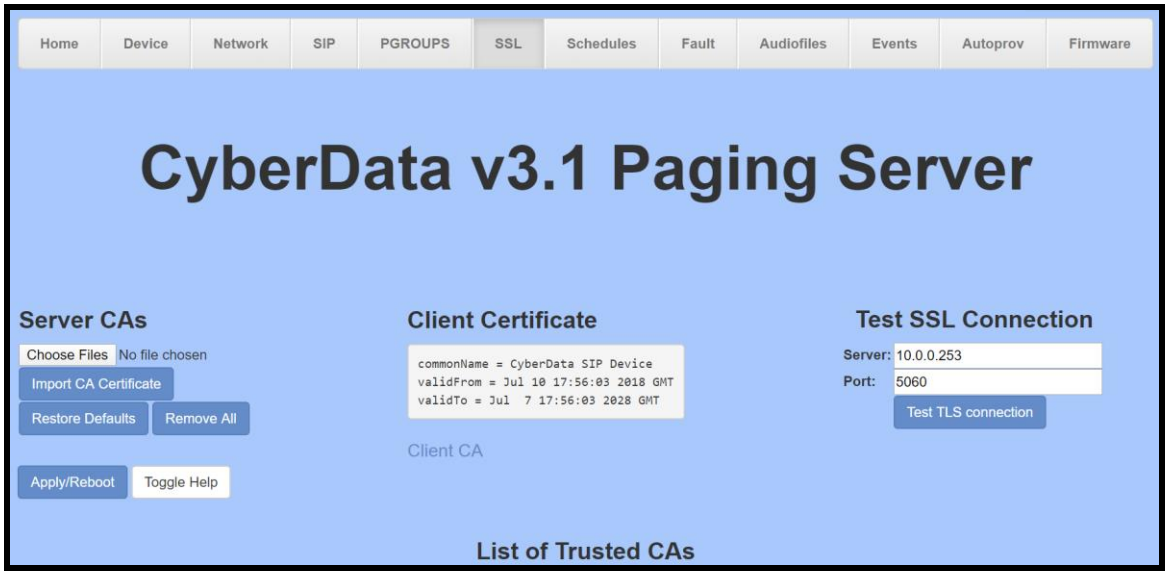


11. Set the 'SIP Transport Protocol' to **TLS**.
12. Keep TLS version set to "**1.2 Only (Recommended)**".
13. Check the box for "**Verify Server Certificate**".
14. Set the **SIP Server** to the SIP Domain from the configuration popup.
15. Set the **User ID** to the Username from the configuration popup.
16. Set the **Authenticate ID** to the Authorization ID from the configuration popup.
17. Set the **Authenticate Password** to the password provided in the configuration popup.
18. Set the **Outbound proxy** and **Outbound Proxy port** to the address provided in the configuration Popup.

Note: *Make sure to separate the port from the outbound proxy information provided by Zoom.*

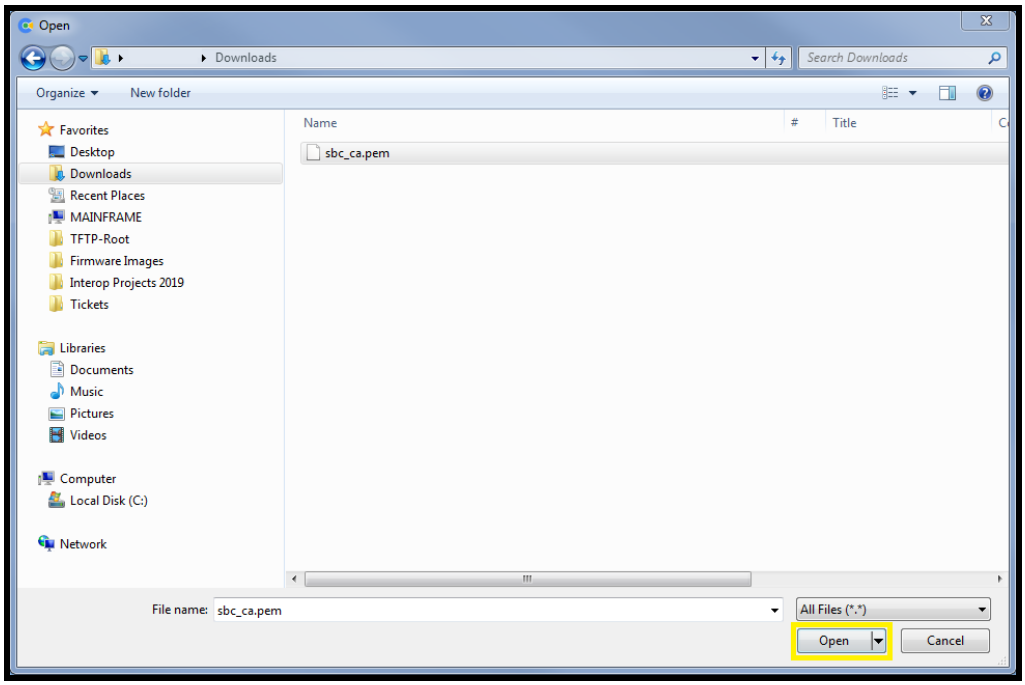
19. Check the box for "**Force Selected Codec**".
20. **Save.**
21. Go to the '**SSL**' Tab.

Figure 5-5: SSL Tab



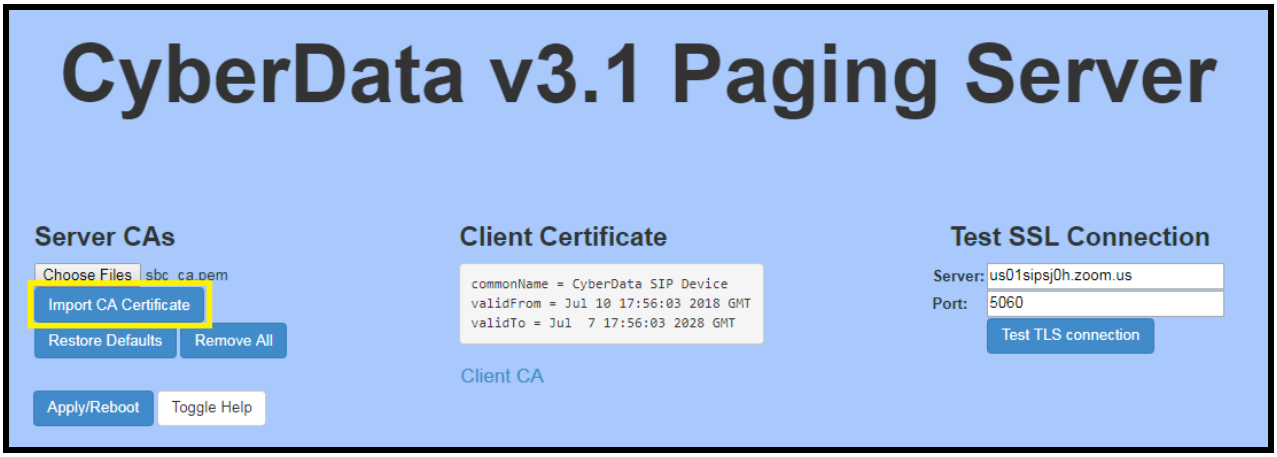
22. Press the 'Choose Files' button.

Figure 5-6: Choose file Pop-up



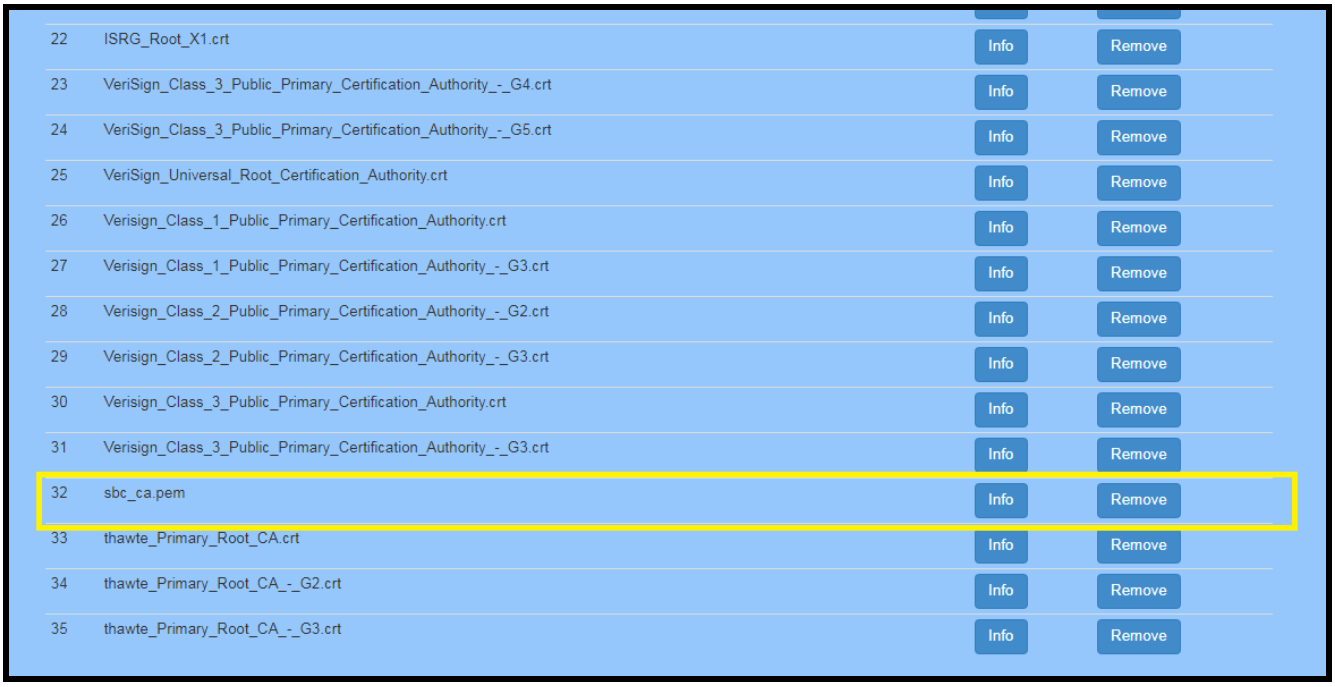
23. Select the "sbc_ca.pem" file and press the Open button.
24. Press the "Import CA Certificate" button to load the cert.

Figure 5-7: Import CA Certificate



25. Once imported, confirm the file is listed with the other certificates.

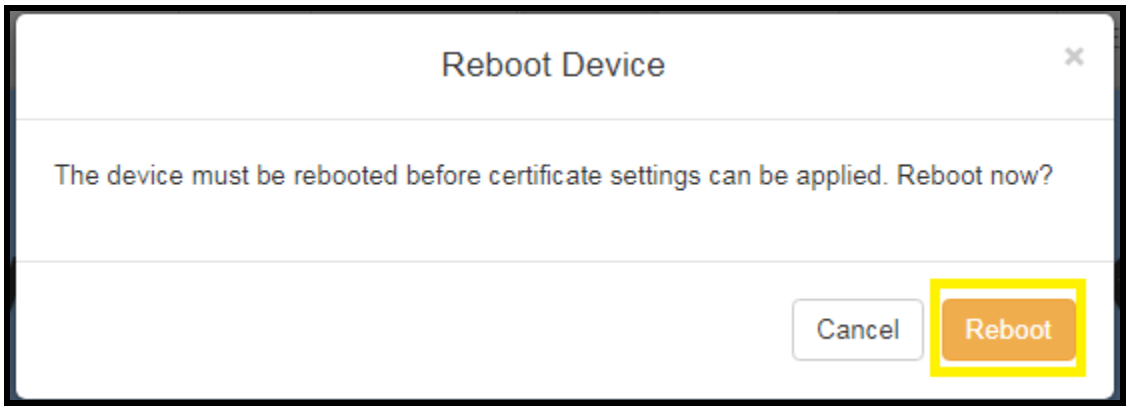
Figure 5-8: Certificate List



1. Once the certificate is loaded a reboot will be required to make the changes take effect Use the "Apply/Reboot Button.

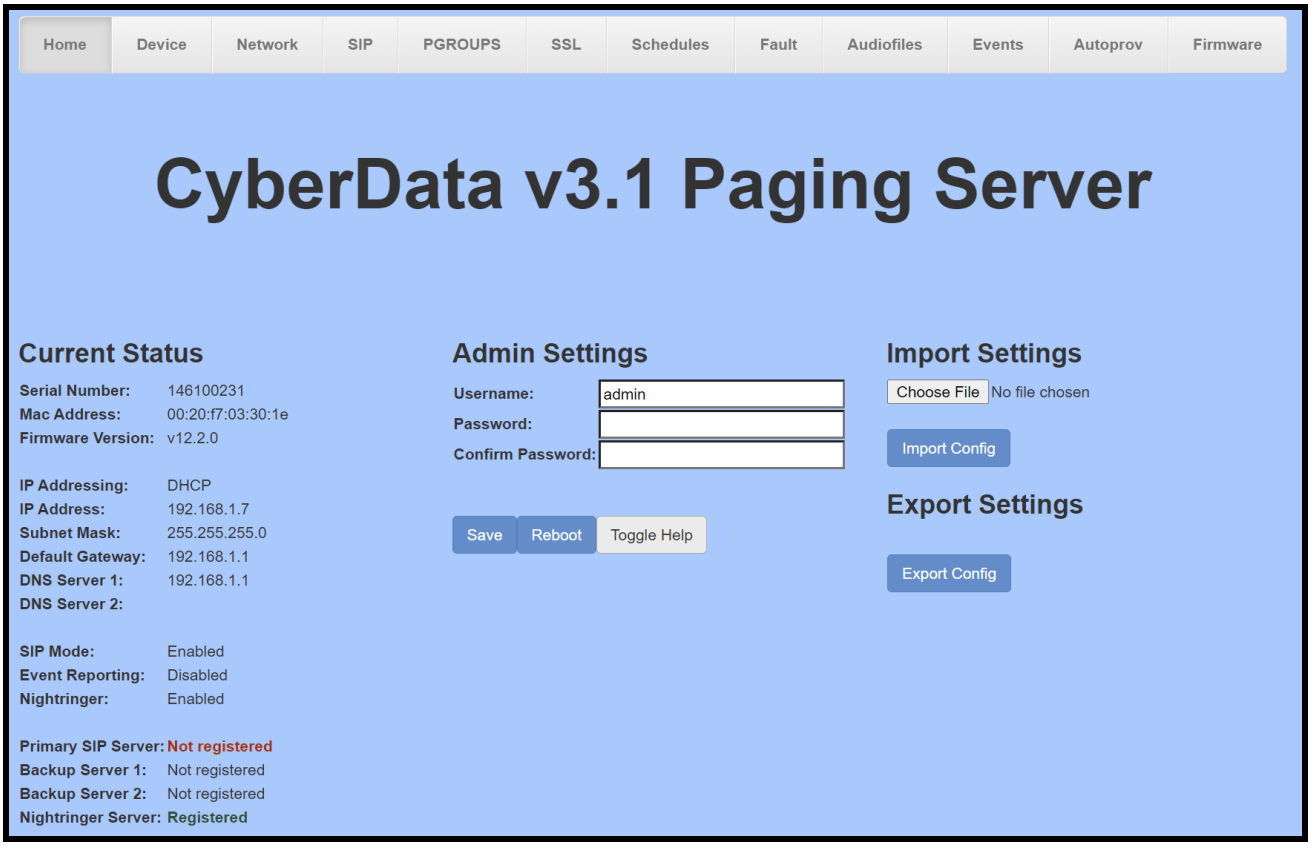
2. Click Reboot in the popup.

Figure 5-9: Apply/Reboot Popup



Once rebooted, "Registered" will appear in green in the "Status" section of the Home page.

Figure 5-10: Home page – Registered



7.0 Using the CyberData SIP Paging Server in a Zoom system

Once the paging server is registered with Zoom, it can be used in several ways. The unit can be directly called by dialing the extension number of the unit. It is also possible to add the unit to a call queue to reach multiple endpoints simultaneously. Keep in mind that with a call queue, multiple devices will ring, but only one device may answer. Due to this operation it is not possible to page to multiple devices at once.

Please reference our Connecting to Compatible Analog Amplifiers page for wiring diagrams for many different amplifiers that can be used with the paging server.

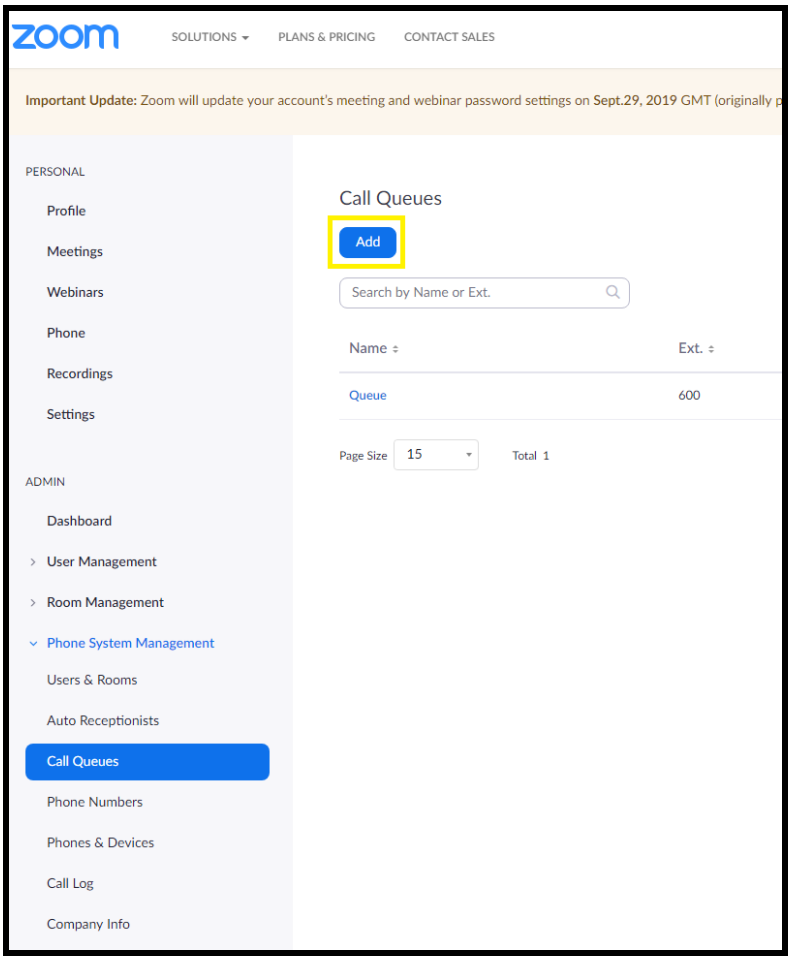
Note: If the amplifier used in your system is not on our list please reach out to our Support department to see if it is compatible. If so, a connection diagram will be created.

7.1 Creating a Call queue

CyberData recommends using the Nightringer extension as part of a call queue, allowing the paging server to also serve as an additional notification for incoming calls.

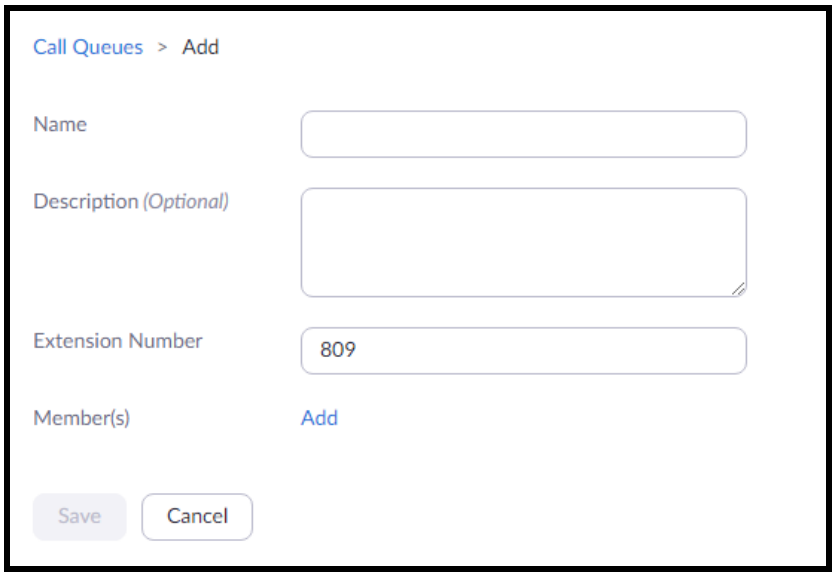
1. From the Phone System Management page select call queues and press the Add button to create a new queue.

Figure 7-1: Add call queue



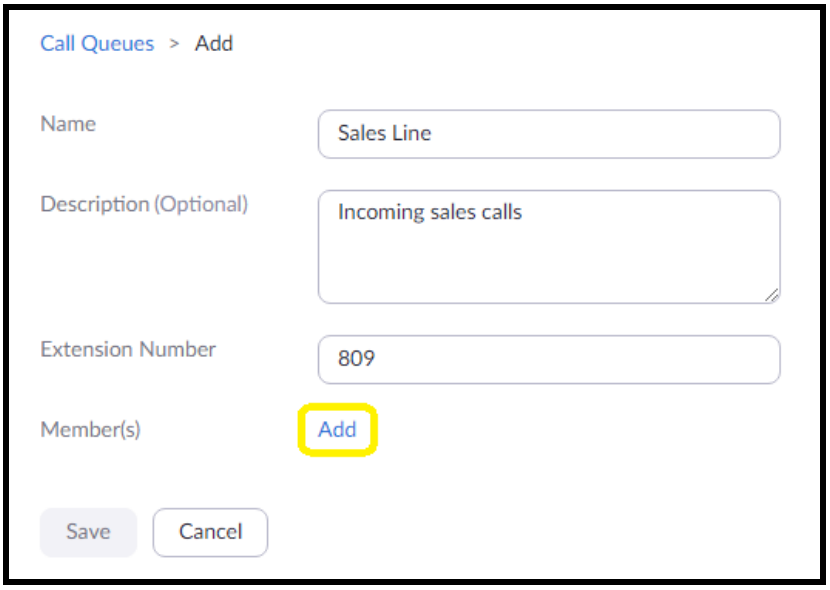
2. After clicking 'Add' a pop-up will appear that allows naming and assigning a number to the call queue.

Figure 7-2: Name the queue



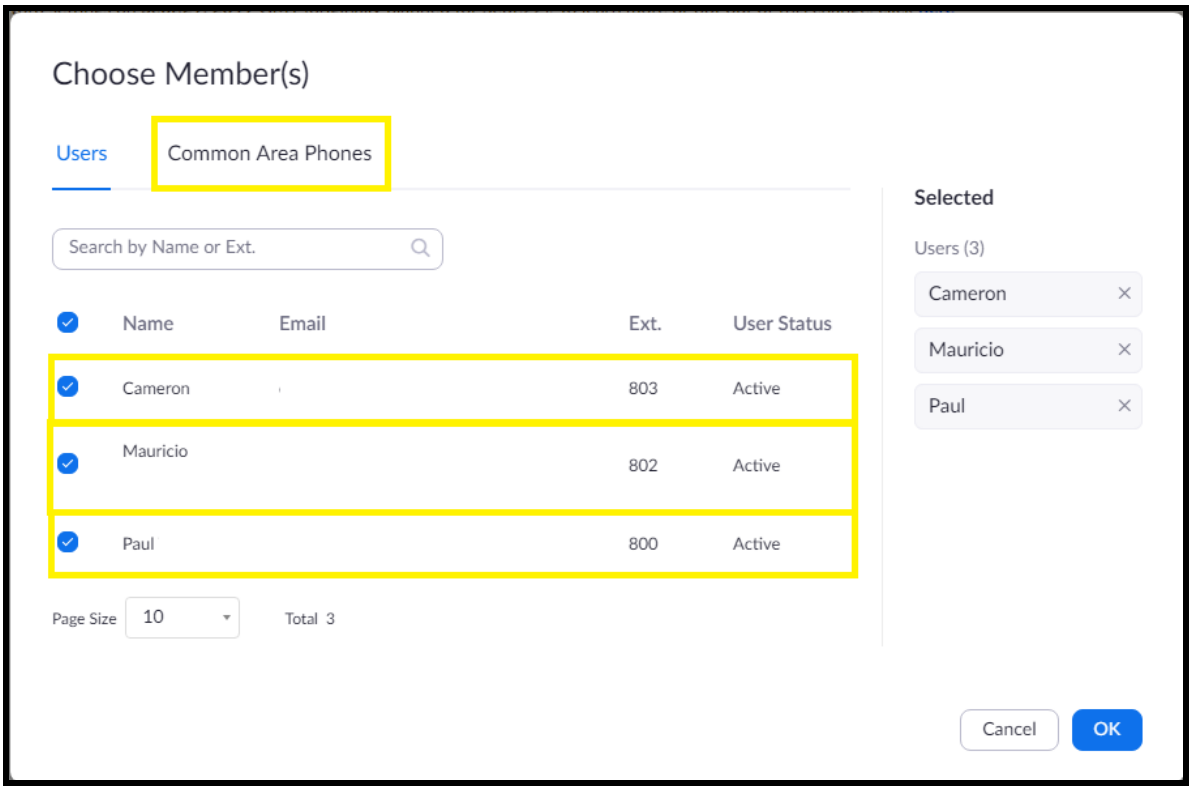
3. Name the queue, set a description and change the extension number if necessary.

Figure 7-3: Add users



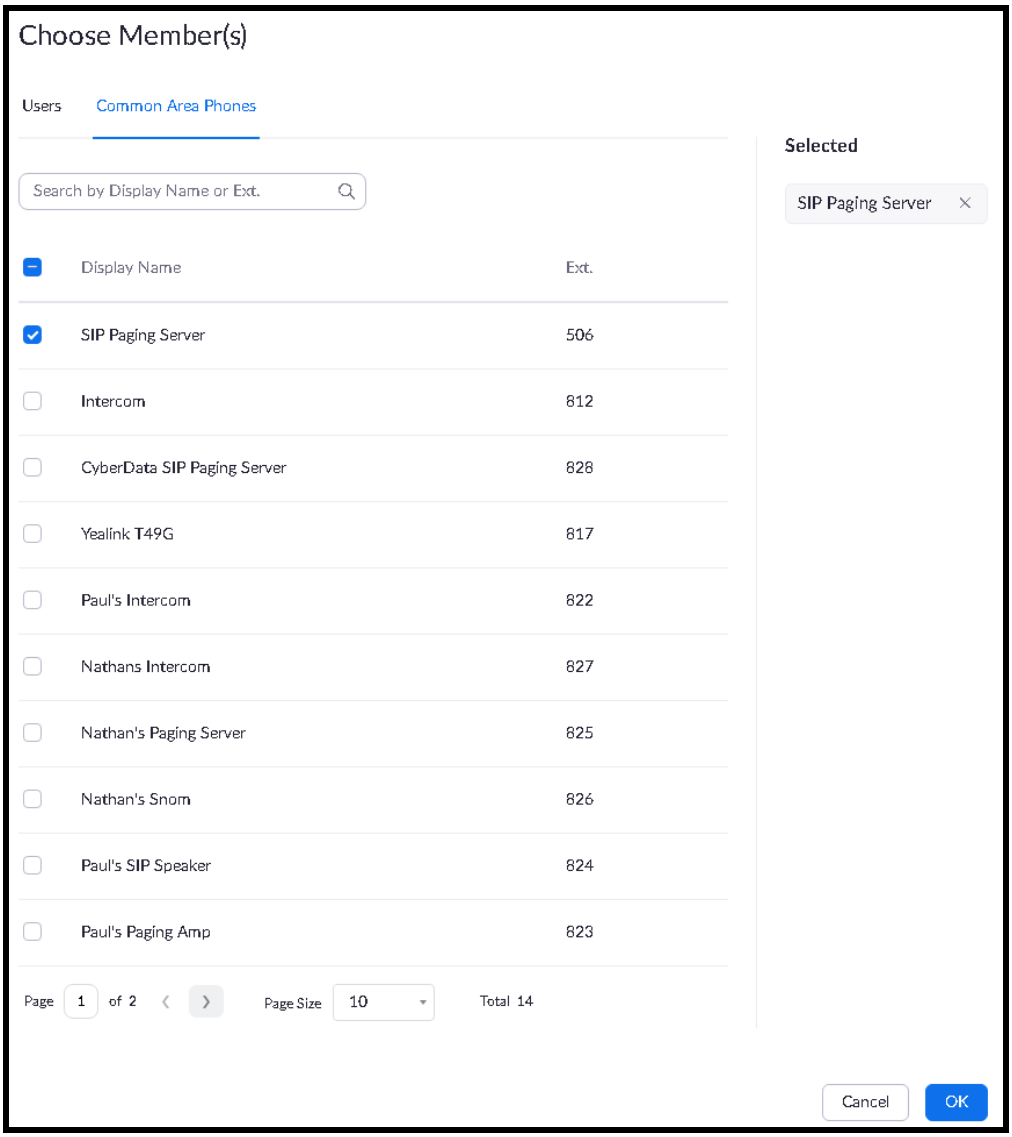
4. Press the Add button to add Users and Common Area Phones to the queue.

Figure 7-4: Add Users



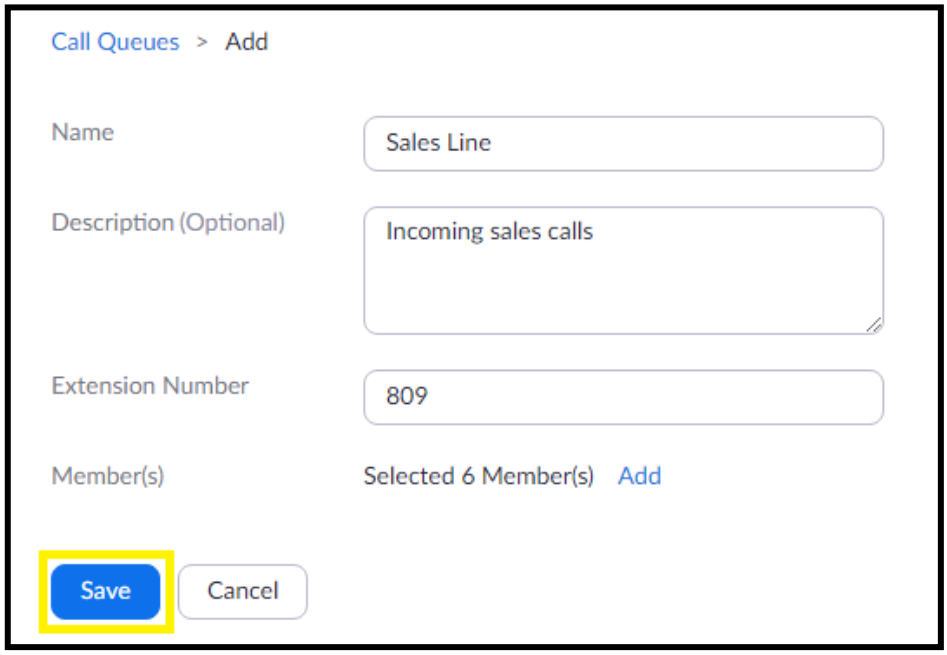
5. Select the users who will participate in the call group, then select "Common Area Phones."
6. In the "Common Area Phones" section, select the phones you wish to add to the queue.

Figure 7-5: Add Common Area Phones



7. Click "OK" to confirm your selections.
8. Finally, press 'Save' to complete the queue.

Figure 7-6: Call queue complete



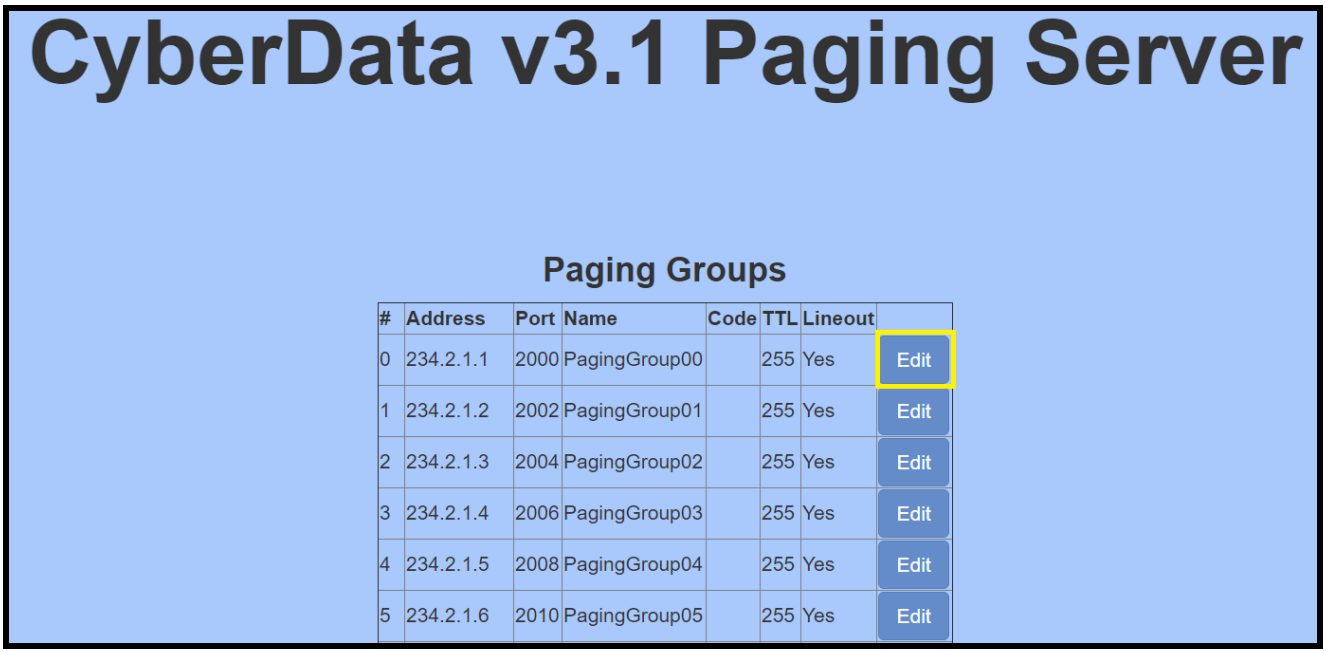
7.2 Multicast Paging

The CyberData SIP Paging Server is a SIP to Multicast out device that is very useful for paging. Multicast allows for a nearly unlimited number of devices to receive a page if they are on the same local network. This makes the paging server a powerful product in any paging solution.

Complete this process after registering the paging server with Zoom. This setup will require making a call to the paging server to send multicast, so registration in necessary.

1. Navigate to the PGroups tab of the SIP Paging Server web interface.
2. Press the **Edit** button on the page group that will be changed.

Figure 7-7. Edit PGroup

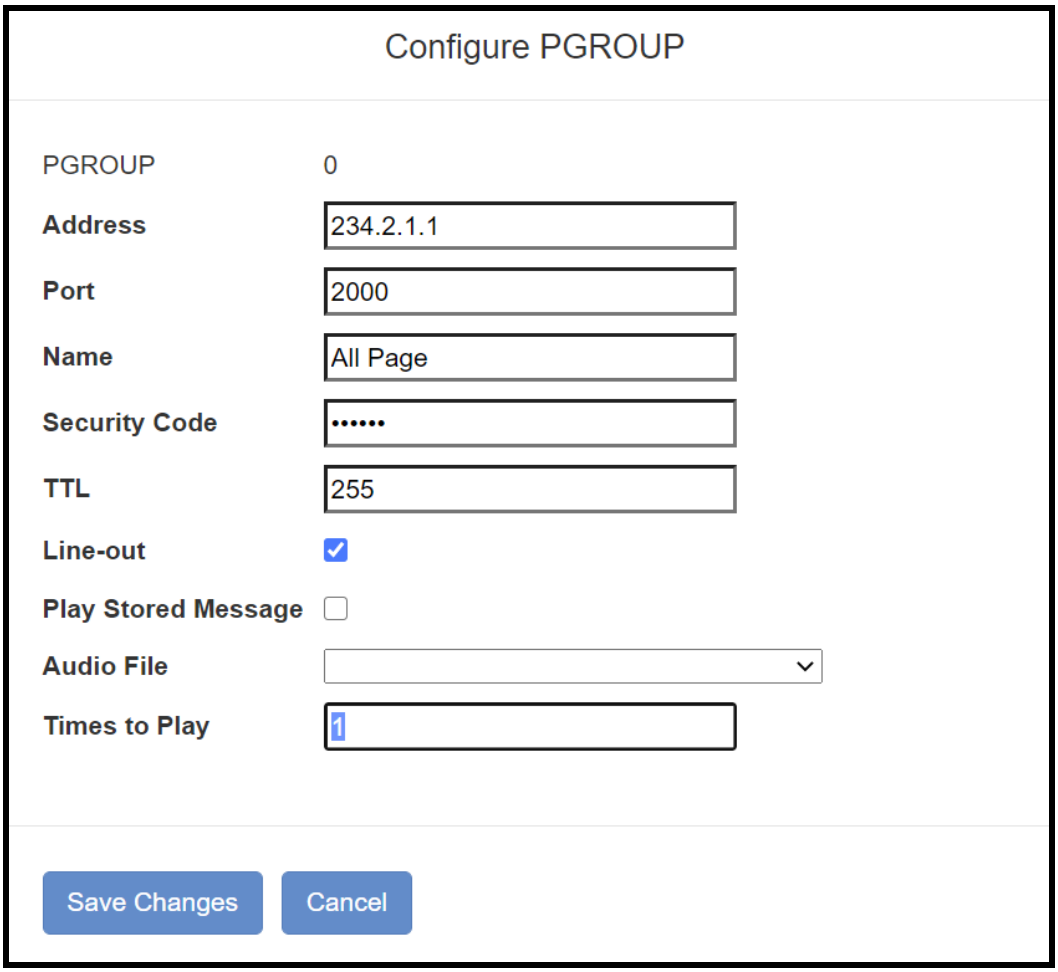


3. In the configure PGroup Popup change all necessary fields.
    a. The **Address** field is the multicast IP Address that will be used.
    b. The **Port** field is the port used in conjunction with the Multicast IP Address.
    c. The **Name** field has no impact on operation and is solely used for identification.
    d. The **Security Code** field is an optional field that will require a security code before paging to that group.
    e. **TTL** or Time To Live is the number of 'hops' the traffic can make before it is delivered to the endpoints, most users do not change this field.
    f. The **Line Out** check box allows the page to play to both Multicast and the paging servers analog outputs.

g. The **Play Stored Message** check box changes the group from a 'Live Page' group to a stored message playback group, which is very useful for playing pre-recorded audio files.
h. IF Play Stored Message is enabled, make sure to select the desired audio file.
i. IF Play Stored Message is enabled, set the number of times to play.

4. Save changes after making all necessary adjustments.

Figure 7-8. Configure PGroup Pop Up.



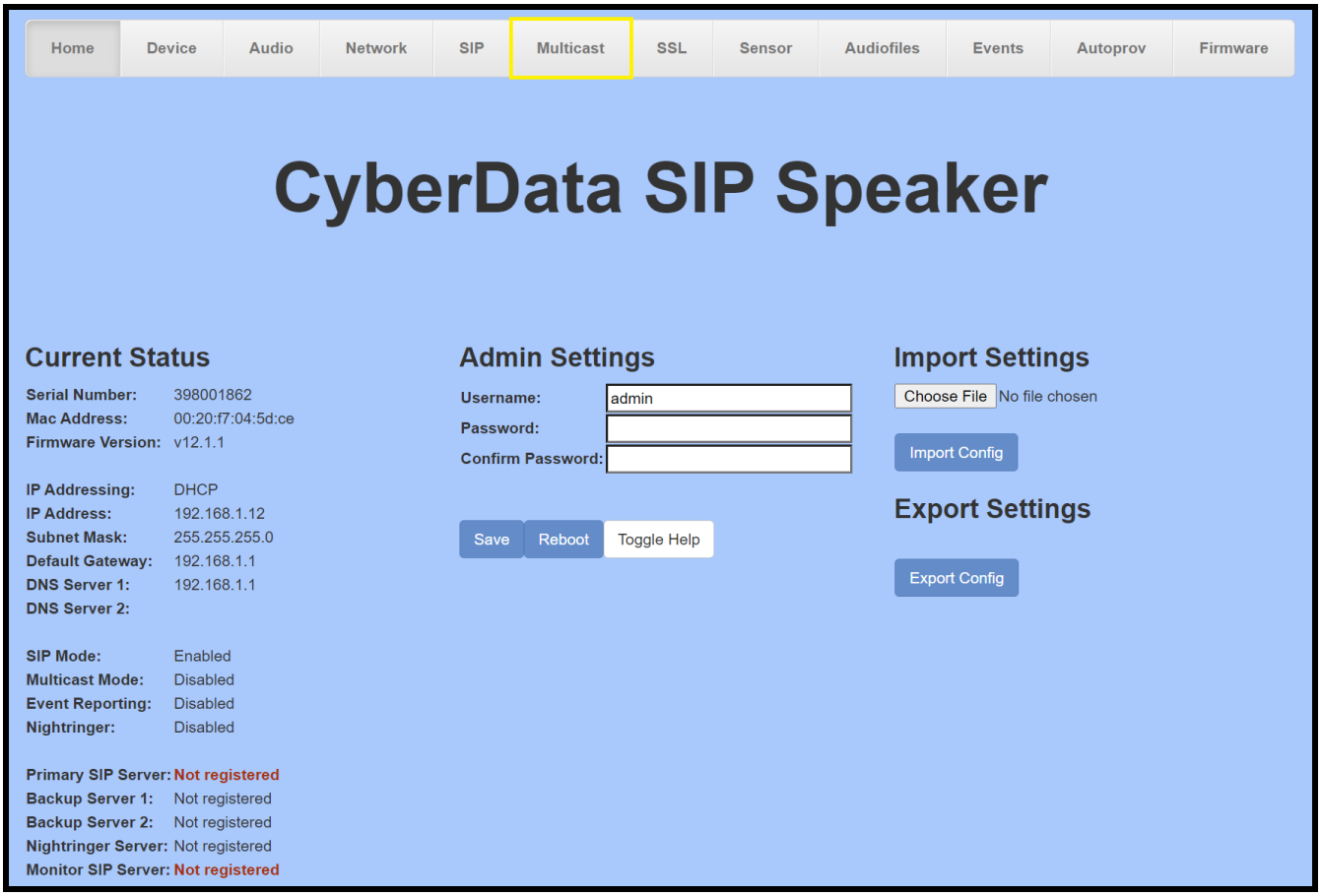
5. Repeat this process for all necessary groups.
6. Save and reboot for the changes to take effect.

7.2.1 Setting up Multicast Receive on other CyberData Products

After configuring PGroups on the paging server, the receiving devices need to be configured to receive that multicast. The process is shared across the CyberData product lines, but for the purposes of this guide a SIP Speaker's configuration process will be shown.

1. Log into CyberData product that will receive the Multicast from the SIP Paging Server.
2. Navigate to the Multicast Tab.

Figure 7-9. Speaker Home tab



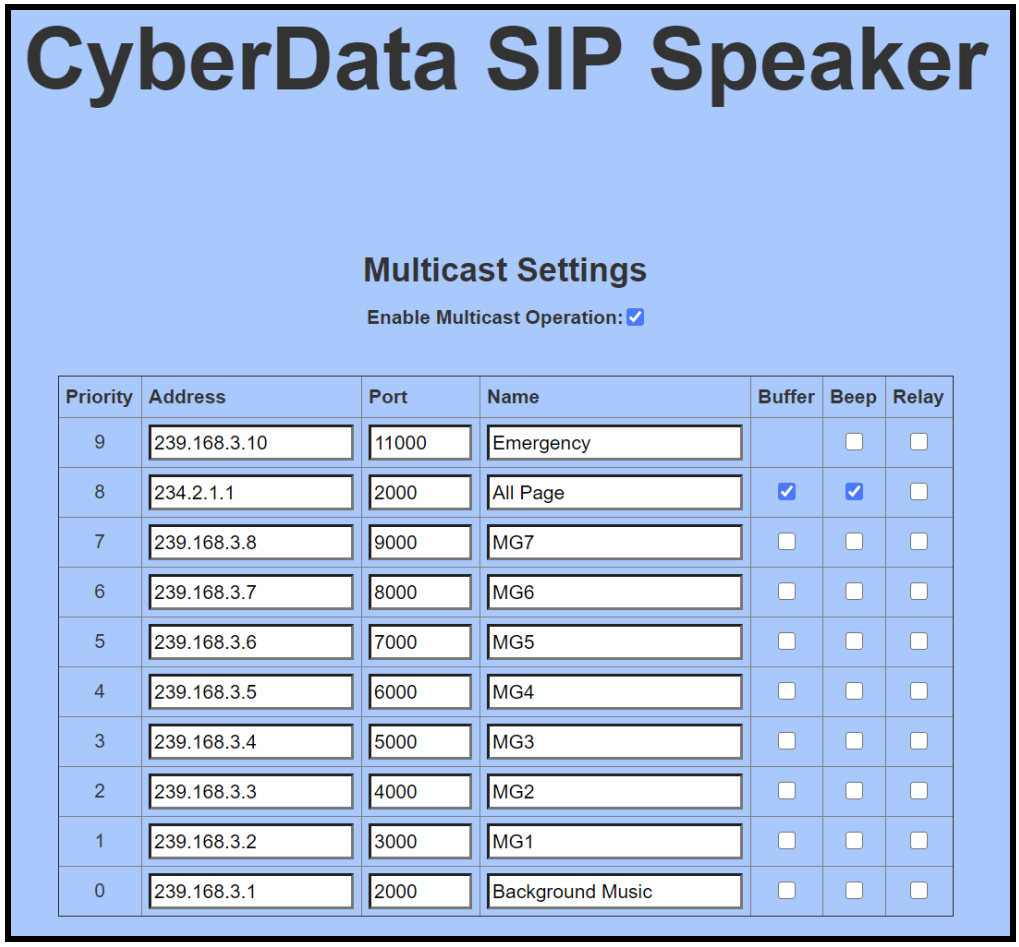
3. Check the box to Enable Multicast and pick a priority for the Multicast group.

Note: *The Multicast feature uses a Priority system to rank groups in order of importance. Group 9 is the highest priority and 0 is the lowest priority. SIP Calls made to the speakers are treated as Priority 4.5, so they will play over Multicast groups 0-4 and will be superseded by Multicast groups 5-9.*

Note: *Multicast priority 9 is treated as 'Emergency' and will always play at max volume.*

4. Set the Multicast Address and Port to match the PGroup on the Paging Server.
5. If desired check Buffered, Beep, or Relay depending on the requirements.
6. Save and Reboot for the changes to take effect.

Figure 7-10. Multicast Tab



Priority	Address	Port	Name	Buffer	Beep	Relay
9	239.168.3.10	11000	Emergency			
8	234.2.1.1	2000	All Page	☑	☑	
7	239.168.3.8	9000	MG7			
6	239.168.3.7	8000	MG6			
5	239.168.3.6	7000	MG5			
4	239.168.3.5	6000	MG4			
3	239.168.3.4	5000	MG3			
2	239.168.3.3	4000	MG2			
1	239.168.3.2	3000	MG1			
0	239.168.3.1	2000	Background Music			

The **Buffer** setting will have the speaker record the Multicast page and play it when it has completed. This will prevent any feedback from the speaker if the page is being made in an area with a speaker.

The **Beep** setting will have the speaker play a beep tone when a multicast is received. This beep plays at the start of the multicast, so it is possible to have overlap with the beep tone and the multicast stream.

The **Relay** setting will have the speaker's onboard relay during the multicast page. This is useful if the onboard relay is connected to another device.

8.0 Contact CyberData Corporation

Sales

For sales-related questions, please visit our Contact CyberData Sales web page for more information.

Technical Support

For CyberData Technical Support, please submit a Contact CyberData VoIP Technical Support form on our website.

The CyberData VoIP Technical Support Contact form initiates a troubleshooting ticket which CyberData uses for quality assurance purposes.

Additionally, the Contact VoIP Tech Support form tells us which phone system you are using, the make and model of the network switch, and other essential troubleshooting information we need to efficiently assist with a resolution. Please also include as much detail as possible in the Describe Problem section of the form. Your installation is extremely important to us.

Documentation Feedback

We realize changes to the software or hardware of the Zoom PBX solution may render this document obsolete. We welcome and encourage documentation feedback to ensure continued applicability.