



Zoom Configuration Guide: SIP Paging Server

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Revision Information

- 9-11-20 Initial Release.
- 3-11-21 Update for Zoom TLS changes.
- 9-16-21 Update for new provisioning process.
- 1-12-23 Update for Primary and Nightringer Extension usage

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1.0 Test Setup Equipment

This section describes the products configured following this document.

Table 1-1: Setup Equipment

EQUIPMENT	MODEL or PART NUMBER	FIRMWARE VERSION
CYBERDATA SIP PAGING SERVER	011146	v20.1.1 or later

2.0 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)

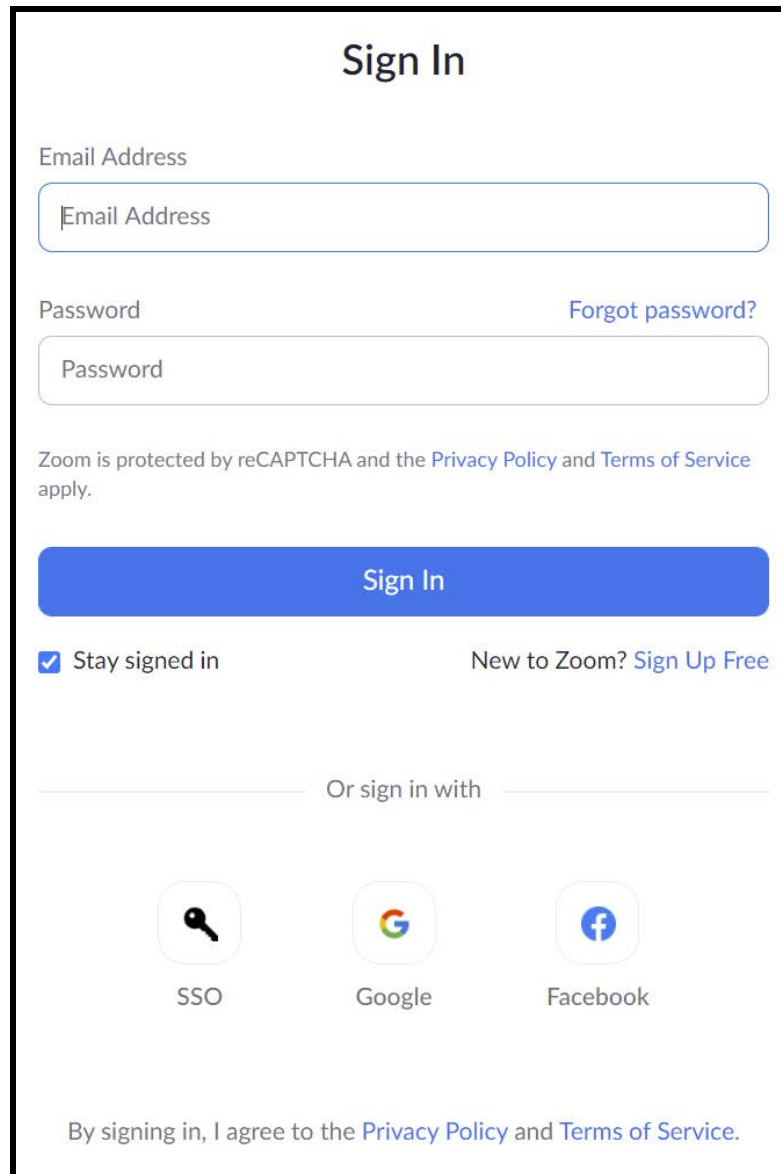
<https://www.cyberdata.net/collections/sip/products/011146>

3.0 Configuration Procedure: Intercom/Paging Device

There are several different extension types that can be used on the Zoom platform. This guide provides instructions to register the CyberData Intercom as an Intercom/Paging Device.

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

Figure 3-1: Log into Zoom

The image shows the Zoom Sign In page. At the top, it says "Sign In". Below that is a form with two input fields: "Email Address" and "Password". To the right of the password field is a link "Forgot password?". Below the form is a blue "Sign In" button. Under the button, there is a checkbox labeled "Stay signed in" which is checked, and a link "New to Zoom? Sign Up Free". Below this is a horizontal line with the text "Or sign in with". Underneath are three icons: a key icon labeled "SSO", the Google logo labeled "Google", and the Facebook logo labeled "Facebook". At the bottom, it says "By signing in, I agree to the Privacy Policy and Terms of Service." with links to "Privacy Policy" and "Terms of Service".

Sign In

Email Address

Email Address

Password

Forgot password?

Password

Zoom is protected by reCAPTCHA and the [Privacy Policy](#) and [Terms of Service](#) apply.

Sign In

☒ Stay signed in

New to Zoom? [Sign Up Free](#)

Or sign in with

SSO

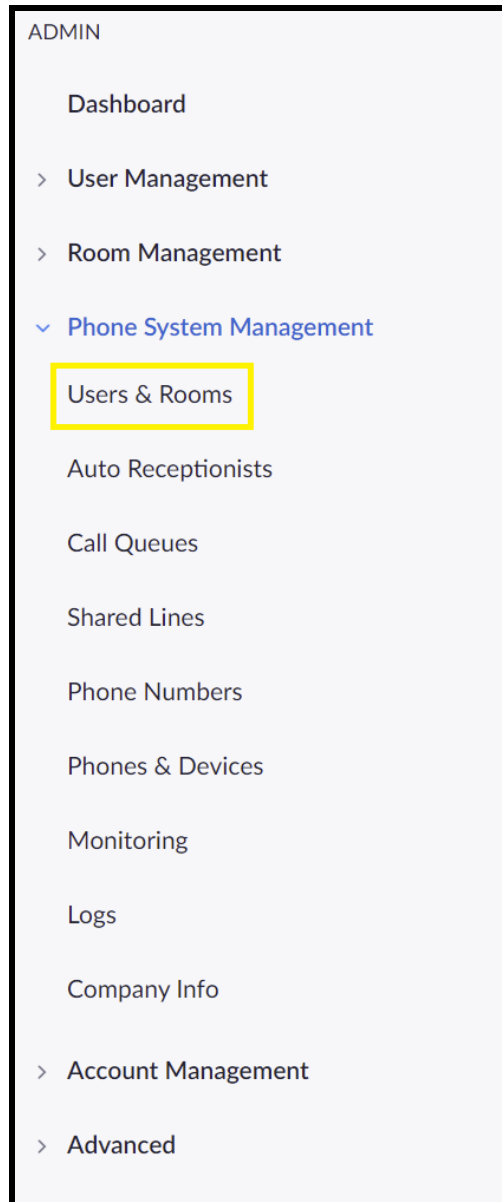
Google

Facebook

By signing in, I agree to the [Privacy Policy](#) and [Terms of Service](#).

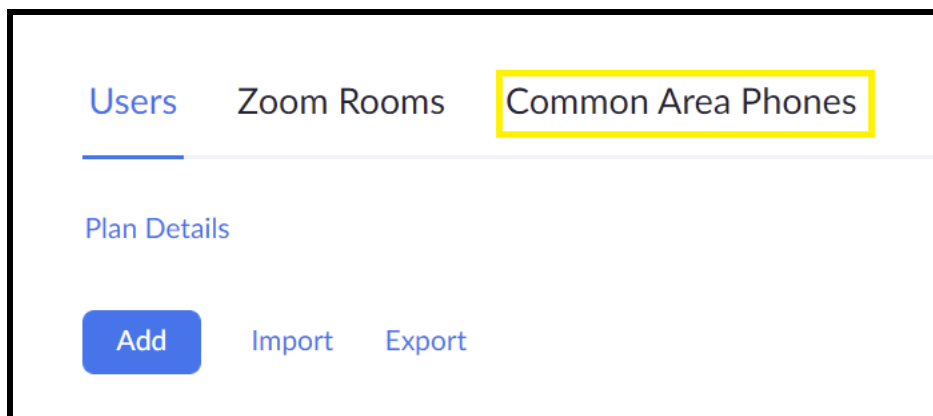
2. From the Profile page select the “Phone System Management” section and the ‘Users & Rooms’ subsection.

Figure 3-2: Profile Landing Page



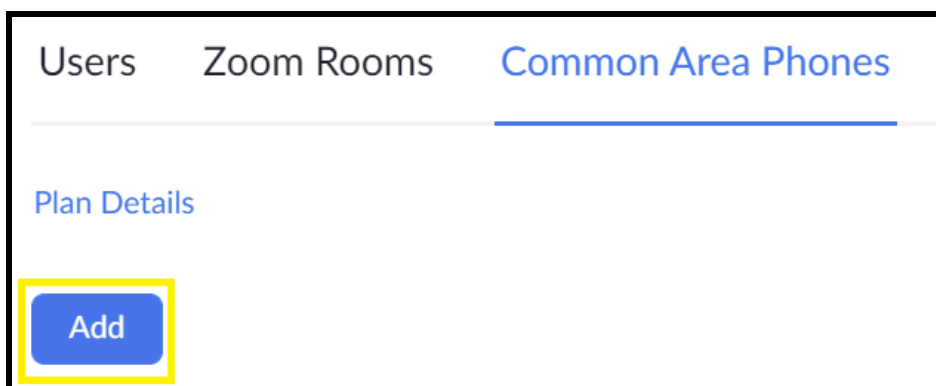
3. From “Users & Rooms” navigate to the Common Area Phones tab.

Figure 3-3: Users & Rooms



4. Press the Add button on the Common Area Phones Tab.

Figure 3-4: Add Common Area Phone



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

Figure 3-5: Add Common Area Phone Pop-up

Add Common Area

Display Name: CyberData Paging Server

Extension Number: 859

Package: Zoom Phone Basic (Migrated) ?
[Assign](#)

Country/Region: United States (+1) ▼

Time Zone: (GMT-8:00) Pacific Time (US and Canada) ▼

☐ Specify a template to be assigned to the Common Area

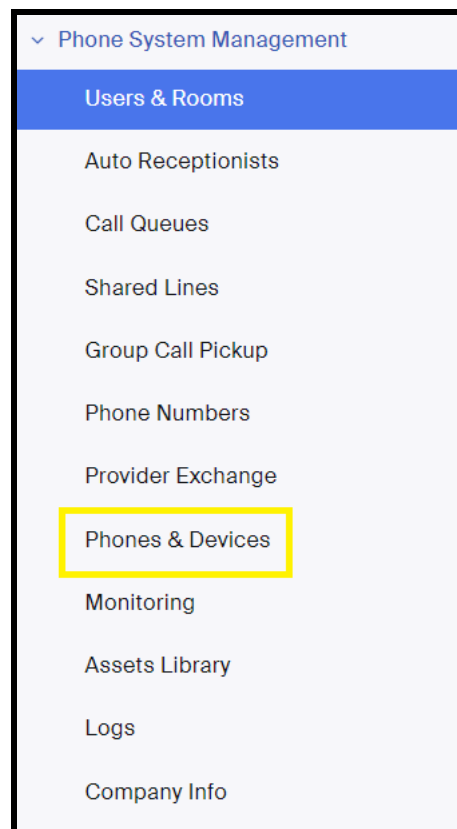
Cancel Save

6. Set the **Display Name** to the name of the intercom.
7. Adjust the **Extension Number** as necessary.
8. Select the desired **Package**.
9. Adjust the **Country/Region** as necessary
10. Adjust the Time Zone if required.
11. Press **Save**.

After creating the common area phone, a device will need to be created to add or associate with the common area phone.

12. From the side tool bar select **Phones & Devices**.

Figure 3-6: Phones & Devices



13. From the Phones & Devices page press the **Add** button to create a new phone.

Figure 3-7: Add Device

The screenshot shows a web form titled "Add Device". It contains several input fields and a list of assigned devices. The "Display Name" field is filled with "CyberData Paging Server". The "Description (Optional)" field is empty. The "MAC Address" field is filled with "0020f7048005". The "Device Type" section has two dropdown menus; the first is set to "CyberData" and the second is set to "cyberdata-sip-based-device". Below these is a light blue informational box stating "This device type supports up to 2 assignees." The "Assigned to" section shows a list with one item: "CyberData Paging Server" with "Ext. 859" and a close icon. To the right of this list is a blue "Assign" button. At the bottom right of the form are "Save" and "Cancel" buttons.

Add Device

Display Name: CyberData Paging Server

Description (Optional):

MAC Address: 0020f7048005

Device Type: CyberData

cyberdata-sip-based-device

This device type supports up to 2 assignees.

Assigned to: CyberData Paging Server Ext. 859

Assign

Save Cancel

14. Set the **Display Name**.

15. Set an optional **Description**.

16. Set the **MAC Address** to that of the device

Setting the MAC address should automatically select CyberData as the device type

17. Set the device to “cyberdata-sip-based-device”

18. Search for and find the Common Area Phone created in the previous step

19. Press **Save**.

20. The page will refresh, and the device will have been created. Press the **Actions** button and select **Provision**.

Figure 3-8: Device Created

Phones & Devices > Assigned > CyberData Paging Server

CyberData Paging Server

Rename

No description

Profile

Policy

Assigned to

CyberData Paging Server

Ext. 859

×

Assign

IP Address

--

Device Type

CyberData cyberdata-sip-based-device

Firmware Version

--

MAC Address

00-20-f7-04-80-05

Edit

Provision Template

Unsupported ?

Status

Offline

Actions ▾

Remove

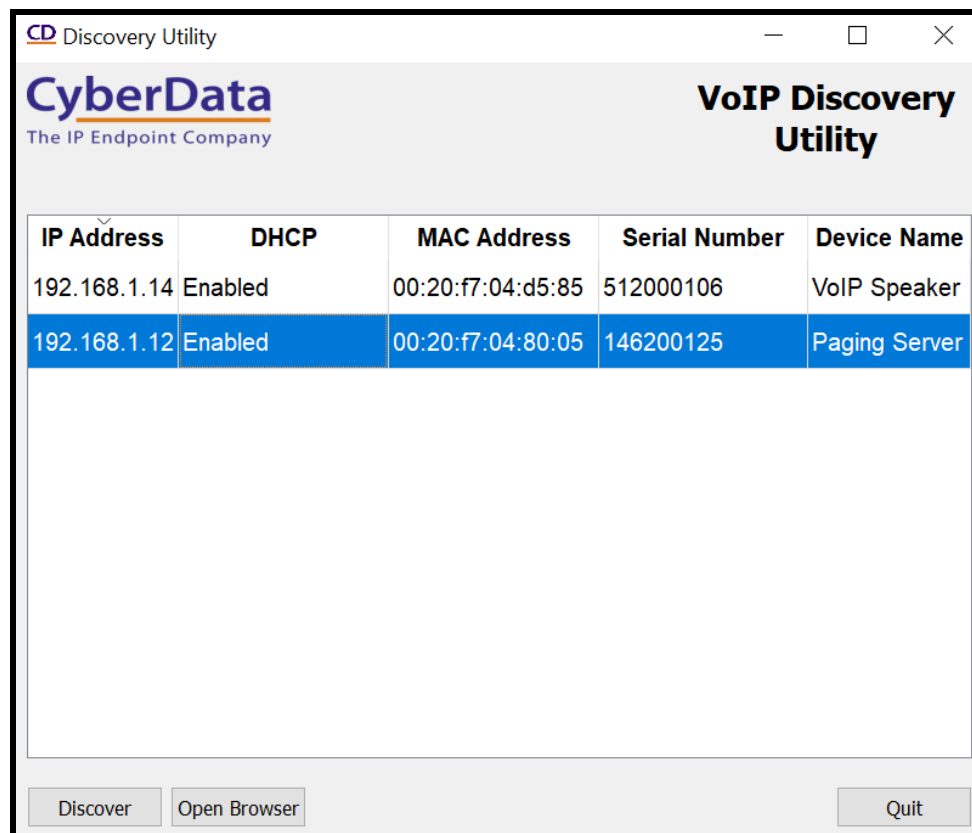
21. In the provisioning pop-up click the **Copy to Clipboard** button to copy the provisioning URL.

4.0 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.

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 4-1: CyberData Discovery Utility



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

Username: admin

Password: admin

HomeDeviceNetworkSIPPGROUPSSSLSchedulesFaultAudiofilesEventsAutoprovFirmware

CyberData Paging Server

Current Status

Serial Number: 146200125
Mac Address: 00:20:17:04:80:05
Firmware Version: v20.1.1
Partition 2: v20.1.1
Partition 3: v20.1.1
Booting From: partition 3

Boot From Other Partition

Admin Settings

Username: admin
Password: *****
Confirm Password: *****

SaveRebootToggle Help

Import Settings

Choose FileNo file chosen

Import Config

Export Settings

Export Config

- CyberData Corporation
3 Justin Court, Monterey, CA 93940
www.cyberdata.net
P 831.373.2601 | F 831.373.4193

Figure 4-3: Autoprov Tab

The screenshot shows the 'Autoprov' tab in the CyberData Paging Server web interface. The interface has a blue header with the title 'CyberData Paging Server' and a navigation bar with tabs: Home, Device, Network, SIP, PGROUPS, SSL, Schedules, Fault, Audiofiles, Events, Autoprov (selected), and Firmware. The main content area is light blue and contains the following configuration fields:

- Enable Autoprovisioning:** ☒
- Autoprovisioning Server:**
- Autoprovisioning Filename:**
- Use tftp:** ☐
- Verify Server Certificate:** ☒
- Username:**
- Password:**
- Autoprovisioning autoupdate (in minutes):**
- Autoprovision at time (HHMM):**
- Autoprovision when idle (in minutes > 10):**

Below the fields, there is instructional text:

See the manual to learn how to use autoprovisioning to configure your device.
 Autoprovisioning happens on boot.
 The device will first look for a configured server address and filename.
 If these haven't been configured, it will look for an autoprovisioning server in your list of DHCP options and try to download '0020f7048005.xml' and if this fails, '000000cd.xml'.

At the bottom, there are three buttons: **Save**, **Reboot**, and **Toggle Help**.

4. Paste the URL copied from the provisioning popup in the **Autoprovisioning Server**.
5. Check the box for **Verify Server Certificate**.
6. Save.
7. Reboot.

Once the unit reboots it will attempt to download the provisioning file from Zoom, which should succeed. This can be verified on the Home tab of the paging server and through the Zoom provisioning popup.

Figure 4-4: Home page - Registered

The screenshot shows the CyberData Paging Server home page. At the top is a navigation bar with tabs: Home, Device, Network, SIP, PGROUPS, SSL, Schedules, Fault, Audiofiles, Events, Autoprovisioning, and Firmware. The main header reads "CyberData Paging Server". Below this are four main sections:

- Current Status:** Displays device information including Serial Number (146200125), Mac Address (00:20:f7:04:80:05), Firmware Version (v20.1.1), Partition 2 (v20.1.1), Partition 3 (v20.1.1), and Booting From (partition 3). It also shows IP Addressing (DHCP), IP Address (192.168.1.12), Subnet Mask (255.255.255.0), Default Gateway (192.168.1.1), and DNS Servers (192.168.1.1). SIP Mode is Enabled, and Event Reporting is Disabled. Under "Primary SIP Server", it shows "Registered" in green, while Backup Server 1, Backup Server 2, and Nighthringer Server are all "Not registered".
- Admin Settings:** Includes fields for Username (admin), Password (masked with asterisks), and Confirm Password (masked with asterisks). Buttons for "Save", "Reboot", and "Toggle Help" are present.
- Import Settings:** Features a "Choose File" button (showing "No file chosen") and an "Import Config" button.
- Export Settings:** Includes an "Export Config" button.

Figure 4-5: Zoom Provisioning Check

The screenshot shows a "Provisioning" dialog box with the following details:

- MAC Address:** 00-20-f7-04-80-05
- Device Type:** CyberData cyberdata-sip-based-device
- Provisioning URL:** <https://provcdp.zoom.us/api/v2/pbx/provisioning/CyberData/cyberdata-sip-based-device> with a "Copy to Clipboard" link.

Below the details, it indicates "Step 1" and shows a green checkmark with the message "Provisioning completed successfully". A "Close" button is located in the bottom right corner.

4.1 Adding Nightringer

CyberData products have a second extension called “Nightringer” that when called the device will ring. This makes the Nightringer extension perfect for use in ring groups. This is easy to add in a Zoom environment.

1. After logging into Zoom a new common area phone will need to be created that will correspond with the Nightringer Extension.
2. From Phone System Management select Users & Rooms and then Common Areas. Finally Press **Add** to create a new Common Area Phone.

Figure 4-6: Add Nightringer

Add Common Area

Display Name

Extension Number

Package Zoom Phone Basic (Migrated) ?
[Assign](#)

Country/Region

Time Zone

☐ Specify a template to be assigned to the Common Area

3. Once configured press **Save** to create the common area phone.
4. After creating the phone navigate to Phones & Devices and select the device where the Nightringer extension will be configured.
5. After selecting the device press **Assign** in the ‘Assigned to’ section.

6. Change the User selection to **Common Area** then find the newly created Nightringer Common Area Phone.
7. Press **Add** to add the second extension

Figure 4-7: Assigning Nightringer

The screenshot shows the 'CyberData Paging Server' configuration page in the Zoom admin console. The breadcrumb trail is 'Phones & Devices > Assigned > CyberData Paging Server'. The page title is 'CyberData Paging Server' with a 'Rename' link. Below the title is a 'No description' field. There are two tabs: 'Profile' (selected) and 'Policy'. Under the 'Profile' tab, the 'Assigned to' section shows a dropdown menu set to 'Common Area' and a button to 'Add' a new extension. A message states: 'After adding the user or the common area, this device will be resynced.' Below this are 'Add' and 'Cancel' buttons. At the bottom, there is a table with device details:

IP Address	192.168.1.12
Device Type	CyberData cyberdata-sip-based-device
Firmware Version	--
MAC Address	00-20-f7-04-80-05
Provision Template	Unsupported ⓘ

Note: After adding the Nightringer Extension Zoom should have the device Resync its config file and this will have the device reboot. It is possible that when the new extension is created it will be assigned to the Primary Extension. Confirm the Nightringer extension is assigned to the correct line key. Line Key 1 is for the Primary Extension and Line Key 2 is for the Nightringer Extension.

8. To reassign the extensions, select Keys & Positions, then press Manage Key.
9. Drag and drop the extensions to the correct Key positions. Key 1 for Primary Extension and Key 2 for Nightringer Extension.
10. Save to confirm the change.

Figure 4-8: Key Positions

Manage Key

- Modifying the Position will cause the device to resync.
- The number of keys you set is limited by the number of keys on the device. Keys that exceed the limit will not be effective.

Key	Key's Owner	Key Assignment	Alias (Optional)	Outbound Caller ID	
1	CyberData Paging Server	Ext. 859 CyberData Paging Server	<input type="text" value="Enter Alias"/>	Main Company Number (831) 217-3337	⬆ ⬇
2	CyberData Nightringer	Ext. 856 CyberData Nightringer	<input type="text" value="Enter Alias"/>	Main Company Number (831) 217-3337	⬆ ⬇
3					⬆ ⬇
4					⬆ ⬇
5					⬆ ⬇
6					⬆ ⬇
7					⬆ ⬇
8					⬆ ⬇
9					⬆ ⬇
10					⬆ ⬇

Page 1 of 30
Page Size 10
Total 300

Cancel Save

5.0 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 to make a page. It is also possible to add the unit to a call queue to reach multiple endpoints simultaneously and take advantage of the Nightringer extension. Keep in mind that with a call queue, multiple devices will ring, but only one device may answer.

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

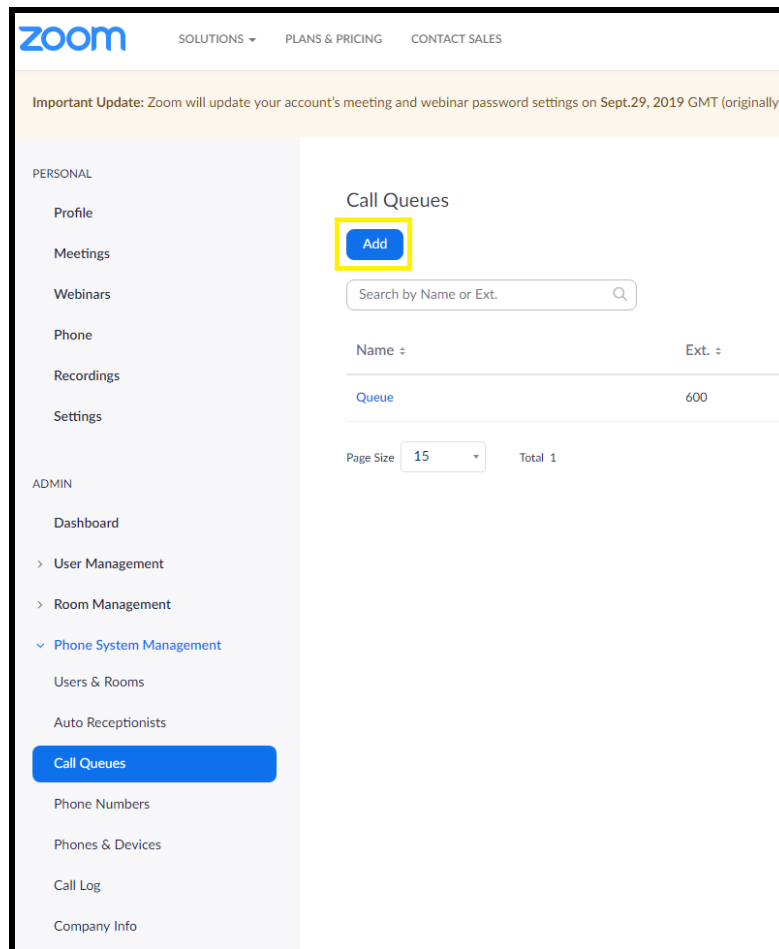
Note: If the amplifier used in your system is not on our list please reach out to our [Support department](#) to see if it is compatible. If so, a connection diagram will be created.

5.1 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 5-1: Add call queue



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

Figure 5-2: Name the queue

Call Queues > Add

Name

Description (Optional)

Extension Number

Member(s) [Add](#)

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

Figure 5-3: Add users

Call Queues > Add

Name

Description (Optional)

Extension Number

Member(s) [Add](#)

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

Figure 5-4: Add Users

Choose Member(s)

Users Common Area Phones

Search by Name or Ext.

<input checked="" type="checkbox"/>	Name	Email	Ext.	User Status
<input checked="" type="checkbox"/>	Cameron		803	Active
<input checked="" type="checkbox"/>	Mauricio		802	Active
<input checked="" type="checkbox"/>	Paul		800	Active

Page Size 10 Total 3

Selected

Users (3)

Cameron X

Mauricio X

Paul X

Cancel OK

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 5-5: Add Common Area Phones

Choose Member(s)

Users

Common Area Phones

Search by Display Name or Ext.

Display Name

Ext.

☒

SIP Paging Server

506

☐

Intercom

812

☐

CyberData SIP Paging Server

828

☐

Yealink T49G

817

☐

Paul's Intercom

822

☐

Nathans Intercom

827

☐

Nathan's Paging Server

825

☐

Nathan's Snom

826

☐

Paul's SIP Speaker

824

☐

Paul's Paging Amp

823

Page 1 of 2

<

>

Page Size 10

Total 14

Selected

SIP Paging Server

Cancel

OK

7. Click “OK” to confirm your selections.
8. Finally, press ‘Save’ to complete the queue.

Figure 5-6: Call queue complete

Call Queues > Add

Name

Description (Optional)

Extension Number

Member(s) Selected 6 Member(s) [Add](#)

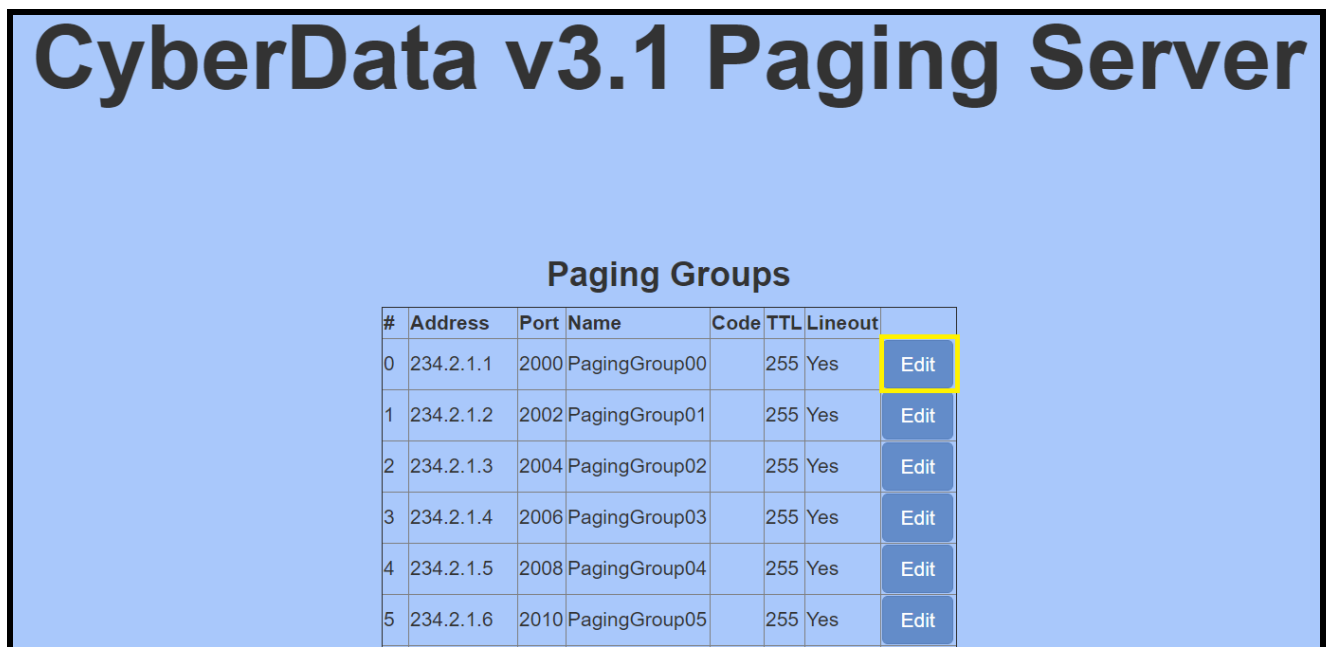
5.2 Multicast Paging

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 is 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 5-7. Edit PGroup



#	Address	Port	Name	Code	TTL	Lineout	
0	234.2.1.1	2000	PagingGroup00		255	Yes	Edit
1	234.2.1.2	2002	PagingGroup01		255	Yes	Edit
2	234.2.1.3	2004	PagingGroup02		255	Yes	Edit
3	234.2.1.4	2006	PagingGroup03		255	Yes	Edit
4	234.2.1.5	2008	PagingGroup04		255	Yes	Edit
5	234.2.1.6	2010	PagingGroup05		255	Yes	Edit

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 5-8. Configure PGroup Pop Up.

Configure PGROUP

PGROUP	0
Address	<input type="text" value="234.2.1.1"/>
Port	<input type="text" value="2000"/>
Name	<input type="text" value="All Page"/>
Security Code	<input type="text" value="....."/>
TTL	<input type="text" value="255"/>
Line-out	<input checked="" type="checkbox"/>
Play Stored Message	<input type="checkbox"/>
Audio File	<input type="text" value=""/> ▼
Times to Play	<input type="text" value="1"/>

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

5.2.1 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 5-9: Speaker Home tab

The screenshot displays the 'CyberData SIP Speaker' configuration web interface. At the top, a navigation bar contains tabs for Home, Device, Audio, Network, SIP, Multicast (highlighted), SSL, Sensor, Audiofiles, Events, Autoprov, and Firmware. The main content area has a large blue header with the title 'CyberData SIP Speaker'. Below this, the interface is divided into three columns. The left column, 'Current Status', lists system information: Serial Number (398001862), Mac Address (00:20:f7:04:5d:ce), Firmware Version (v12.1.1), IP Addressing (DHCP), IP Address (192.168.1.12), Subnet Mask (255.255.255.0), Default Gateway (192.168.1.1), DNS Server 1 (192.168.1.1), and DNS Server 2. It also shows SIP Mode (Enabled), Multicast Mode (Disabled), Event Reporting (Disabled), and Nightringer (Disabled). At the bottom of this column, it lists various servers: Primary SIP Server (Not registered), Backup Server 1 (Not registered), Backup Server 2 (Not registered), Nightringer Server (Not registered), and Monitor SIP Server (Not registered). The middle column, 'Admin Settings', contains fields for Username (admin), Password, and Confirm Password, with 'Save', 'Reboot', and 'Toggle Help' buttons below. The right column, 'Import Settings', features a 'Choose File' button (showing 'No file chosen') and an 'Import Config' button. Below this is an 'Export Settings' section with an 'Export Config' button.

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 5-10: Multicast Tab

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

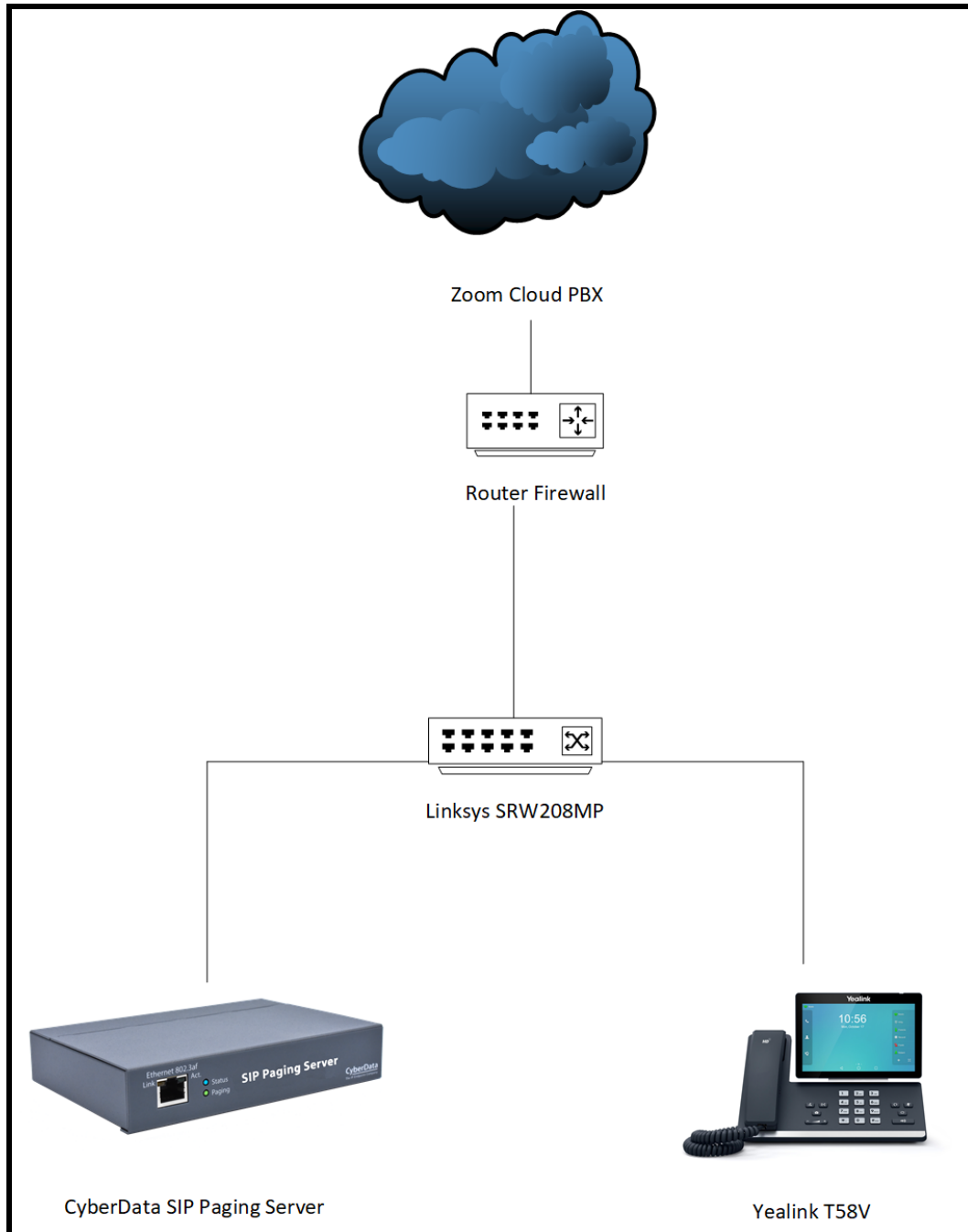
The **Buffer** setting will have the speaker record the Multicast page and play it when it has completed. This will prevent any feedback from the speaker if the page is being made in an area with a speaker.

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.

6.0 Setup Diagram

Figure 6-1: Interoperability Test Infrastructure



7.0 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.