

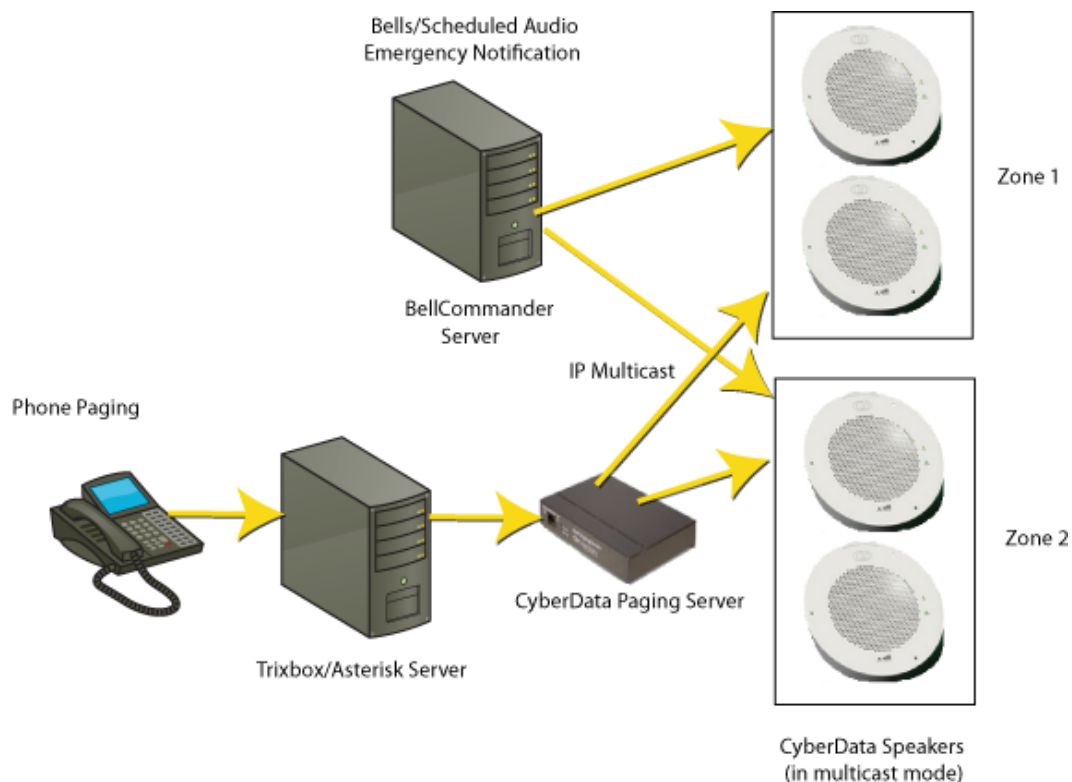
BellCommander Configuration Guide – CyberData and Trixbox/Asterisk

Overview: BellCommander work with Trixbox, Asterisk, and Asterisk based systems to provide a complete scheduled audio, paging, and emergency notification solution. Audio can be sent via a multicast or SIP configuration.

Multicast Configuration

In this configuration of BellCommander, the BellCommander software is used for audio scheduling and emergency notification, while a CyberData Paging Server provides a paging interface to the speakers. This configuration is recommended for version 1 CyberData products. V2 products from CyberData function well with BellCommander in either SIP or multicast.

In this configuration, Trixbox would run on a separate Linux server and would interface with the CyberData Paging Server to provide a multicast gateway to the CyberData speakers. The BellCommander software would run on a Windows PC or server and send audio at scheduled times via multicast to the CyberData speakers.

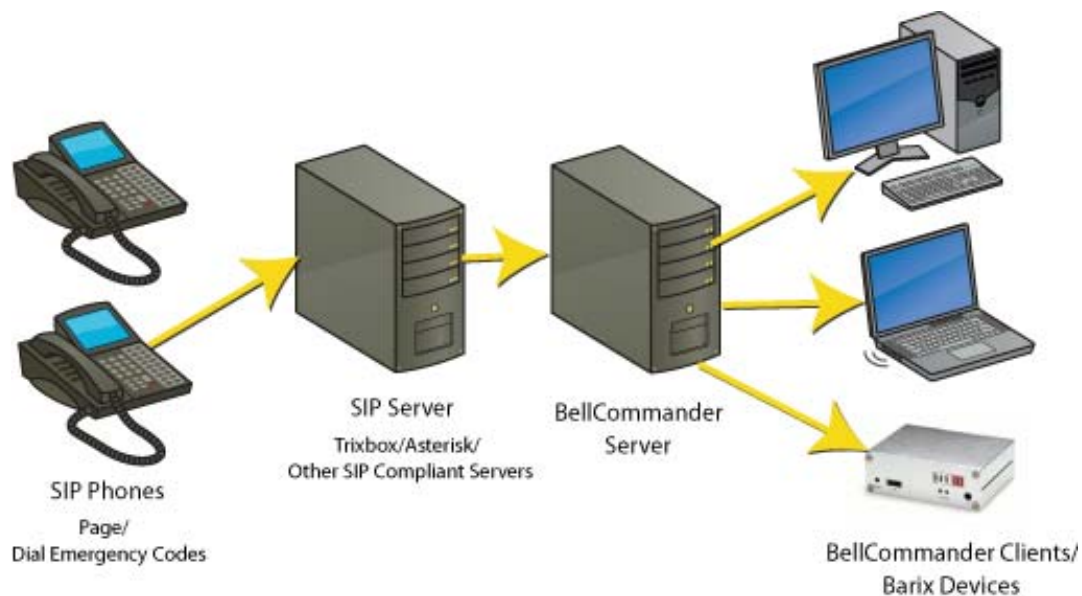


SIP Configuration

In the SIP Configuration of BellCommander, BellCommander is installed on a Windows server and Trixbox is installed on a Linux server. BellCommander registers with Trixbox as a SIP extension and communicates over the network. BellCommander works with Trixbox to provide bells, paging, and emergency notification. In this configuration, paging extensions can be defined in the Trixbox that will allow audio to be broadcasted to SIP phones, CyberData speakers, or to a combination of both.


CyberData V2 products are recommended for this configuration, since V1 products may not have clear audio.

In this configuration of BellCommander, BellCommander registers with Trixbox as a SIP extension and it calls paging Trixbox paging extensions to reach different paging groups. CyberData speakers should be registered in SIP mode with Trixbox and assigned to paging extensions to allow BellCommander to call a paging extension and have audio sent to the CyberData speaker. Paging is also implemented fully by Trixbox in this configuration and users can use a SIP phone to call a Trixbox paging extension to reach a group of phones, CyberData speakers, or combination of speakers and phones.



Multicast Setup Guide

1. Install the latest firmware for the CyberData devices.
2. Set CyberData speakers/amplifiers in MGROUPS mode.
3. Under MGROUPS settings, add a multicast address for each zone that the speaker will be part of. In the example above, the top speaker could be assigned one multicast address for Zone 1 and a second multicast address for an all-call to reach all speakers.



MGROUPS Setup

Device Name: Ceiling Speaker

	Multicast IP Address	Port: 2000-65535	Priority: High	MGROUP Name	Beep
MG-Emergency	224.10.1.1	4567	9	Emergency	<input checked="" type="checkbox"/>

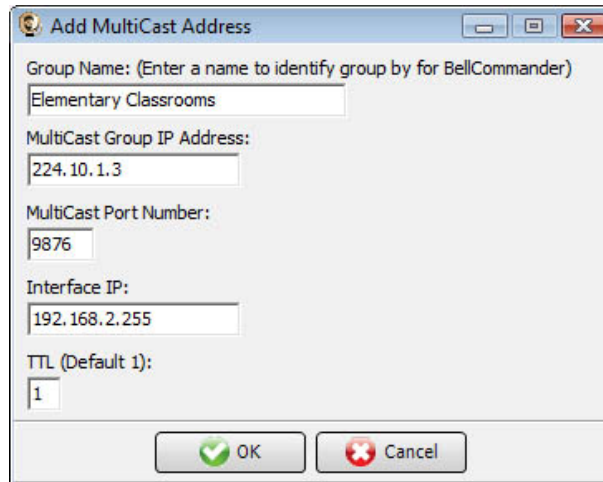
	Multicast IP Address	Port: 2000-65535	Priority: 1-8	MGROUP Name	Beep
MG-1	224.10.1.2	9876	5	BC-All Call	<input type="checkbox"/>
MG-2	224.10.1.3	9876	4	BC-Elementary Classrooms	<input type="checkbox"/>
MG-3	224.10.1.4	9876	3	Paging - Elementary	<input checked="" type="checkbox"/>
MG-4	224.10.1.5	9876	2	Paging - All Call	<input checked="" type="checkbox"/>
MG-5	224.10.1.6	9876	1	Paging - Classroom	<input checked="" type="checkbox"/>
MG-6					<input type="checkbox"/>
MG-7					<input type="checkbox"/>
MG-8					<input type="checkbox"/>

	Multicast IP Address	Port: 2000-65535	Priority: Low	MGROUP Name	Beep
MG-Background	224.10.1.10	9876	0	BGM	<input type="checkbox"/>

[Save Settings](#) [Reboot](#)

In the configuration above two multicast addresses are created for BellCommander for reaching the elementary school and for reaching the full campus. This allows bells and scheduled audio to be broadcasted across the campus or just to the elementary school classrooms. Separate zones were also created for the CyberData Paging Server to provide paging to the full campus, elementary classrooms, and to the individual classroom.

4. In BellCommander, add the multicast addresses:
 - a. Open the BellCommander Device Manager by clicking the Devices button.
 - b. Select Multicast Groups from the Sound Device Type drop-down.
 - c. Click the Add... button.
 - d. Enter the following values:
 - Group Name** – A name to identify the group by in BellCommander.
 - Multicast Group IP Address** – The multicast IP address
 - Multicast Port Number** – Corresponding port number
 - Interface IP** – Generally, the computer's IP with .255 at the end. If the computer is 192.168.2.132, then enter 192.168.2.255
 - TTL** – Time-To-Live for packets. Generally, set to 1 if on the same subnet.



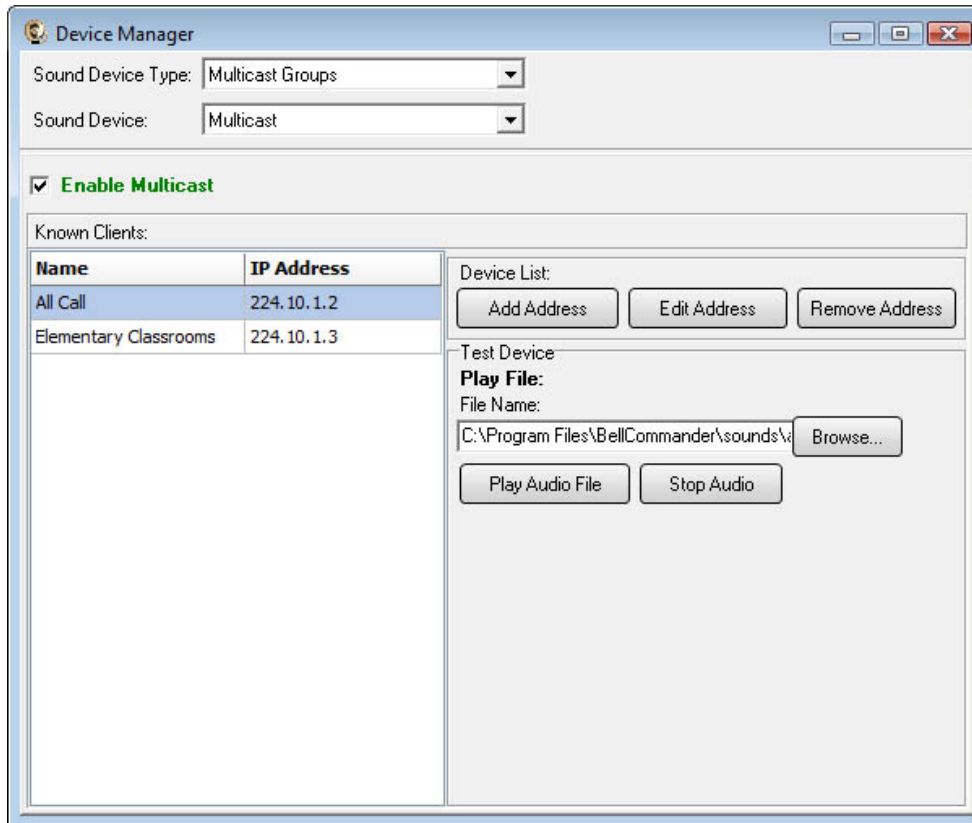
The screenshot shows a dialog box titled "Add MultiCast Address". It contains the following fields and values:

- Group Name: (Enter a name to identify group by for BellCommander): Elementary Classrooms
- MultiCast Group IP Address: 224.10.1.3
- MultiCast Port Number: 9876
- Interface IP: 192.168.2.255
- TTL (Default 1): 1

At the bottom of the dialog box, there are two buttons: "OK" and "Cancel".

- e. Repeat steps c and d for each multicast address.
- f. To test a multicast address, select a multicast address from the list

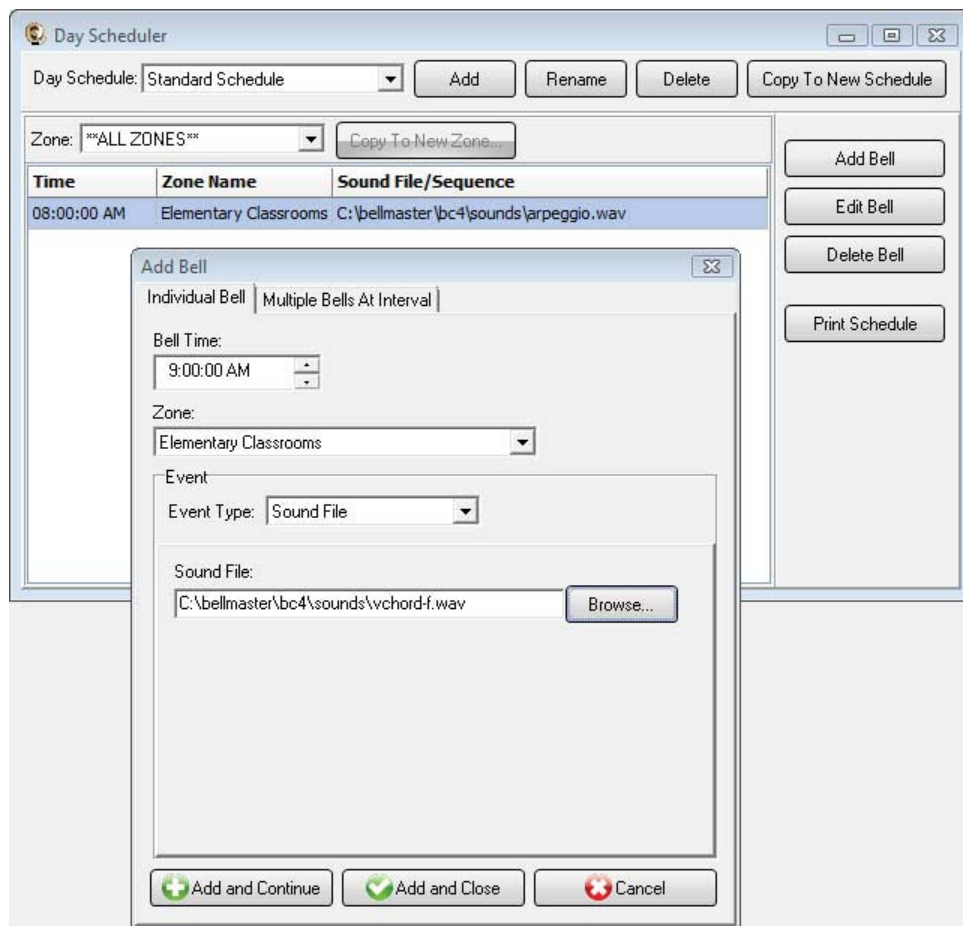
5. Test each multicast address, by selecting the multicast group from the list. Then, click the Browse... button to locate a WAV file and click the Play Audio File button to play the WAV file. The WAV file should play after the button is pressed.



Scheduling For Multicast Groups:

1. Create a zone in BellCommander for each multicast address.
 - a. Click the Zones button to view the Zone Manager window.
 - b. Click the Add Zone button to add a new zone. Enter a name for the zone, ex. Elementary Classrooms.
 - c. Select the new zone and click the Edit Device List button. Select the corresponding multicast group from the Available Devices and click the ">>" button to add it to the zones. Multiple multicast groups can also be added to create a zone consisting of multiple smaller zones.

2. Create a day schedule. A day schedule represents a single day's 24 hour schedule that can be applied to dates on the BellCommander calendar. To create a Day Schedule:
 - a. Click the Day Scheduler button.
 - b. Click the top Add button to add a new day schedule. Enter a name to identify the schedule, ex. Standard Schedule
 - c. Click the Add Bell button to add a new bell to the schedule. In the Add Bell window,
 - i. Select the time for the bell.
 - ii. Select the zone that the bell should play to.
 - iii. For a single sound file select, select "Sound File" for the event type and select a WAV audio file.



3. Assign the day schedule(s) to the Calendar Scheduler. To assign schedules to the Calendar Scheduler:
 - a. Click the Calendar button to view the Calendar Scheduler window.
 - b. Click the Set Default Weekly schedule button to set the default schedule and set the following values:

Weeks in the schedule:

If schedule is the same every week, select “Same schedule every week”.

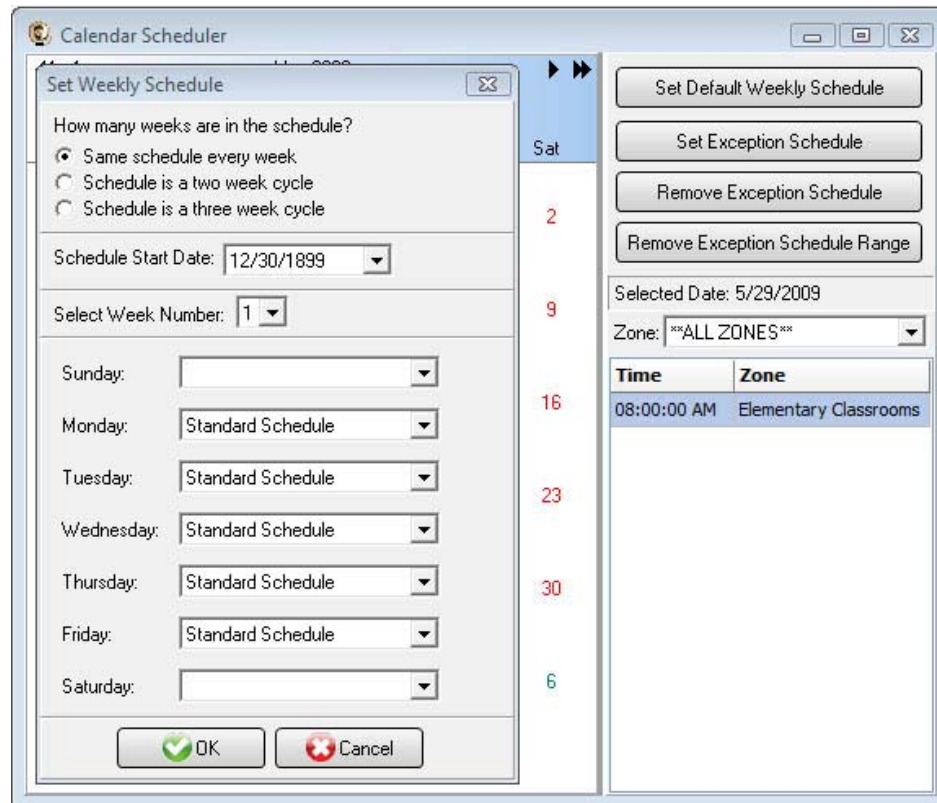
If schedule repeats bi-weekly, select “Schedule is a two week cycle”.

If schedule repeats tri-weekly, select “Schedule is a three week cycle”.

Schedule Start Date – If schedule starts in the future select a future date; otherwise, the default value (12/30/1899) will start the schedule immediately.

Select Week Number – If using a bi-weekly or tri-weekly schedule, this allows the first, second, or third week to be selected for the days of the week listed. Select 1 to program the first week, 2 to program the second week, 3 to program the third week.

Days of the week – Use the drop-down for each day of the to select a schedule. If no audio should be scheduled for the day of the week, leave the day name blank.



- c. To set different schedules by date, add additional schedules in the Day Scheduler and select dates on the calendar and click the Set Exception Schedule button to set different schedules by date.

SIP Setup Guide

For the SIP configuration of BellCommander, an extension will need to be added to Trixbox and to BellCommander. This extension will allow BellCommander to make outgoing calls through Trixbox to CyberData speakers and IP phones. To add the extension,

1. Open the Trixbox Control Panel in admin mode (web-based).
2. Click on PBX on the menu.
3. Click Extensions on the left side of the page.
4. Click Add Extension.
5. Select "Generic SIP Device"
6. In the Add Extension page, enter the following:
User Extension: A number for the extension. Can be any valid extension number.
Display Name: Name to identify the extension as in Trixbox. Can be any name.
SIP Alias: Typically the same as the extension number.
Call Waiting: Disable
Secret: Numeric password that will be used by BellCommander to register the extension.
Click Submit
7. Click Apply Configuration Changes

Add Extension

User Extension	<input type="text" value="500"/>
Display Name	<input type="text" value="BellCommander SIP"/>
CID Num Alias	<input type="text"/>
SIP Alias	<input type="text" value="500"/>

Extension Options

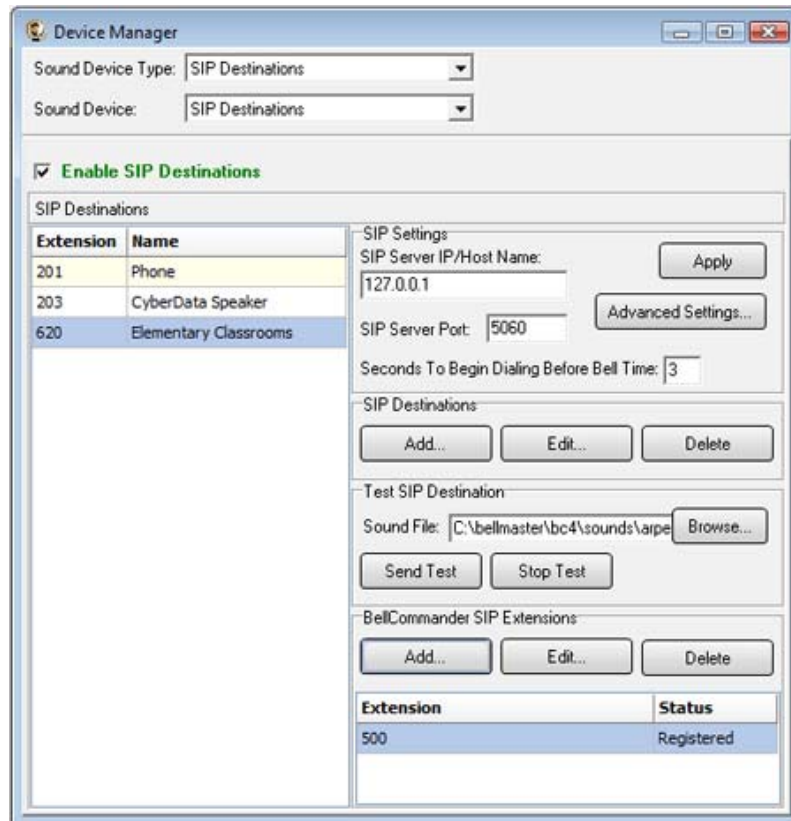
Direct DID	<input type="text"/>
DID Alert Info	<input type="text"/>
Music on Hold	<input type="text" value="default"/>
Outbound CID	<input type="text"/>
Ring Time	<input type="text" value="Default"/>
Call Waiting	<input type="text" value="Enable"/>
Emergency CID	<input type="text"/>

Device Options

This device uses sip technology.

secret	<input type="text" value="500pass"/>
dtmfmode	<input type="text" value="rfc2833"/>

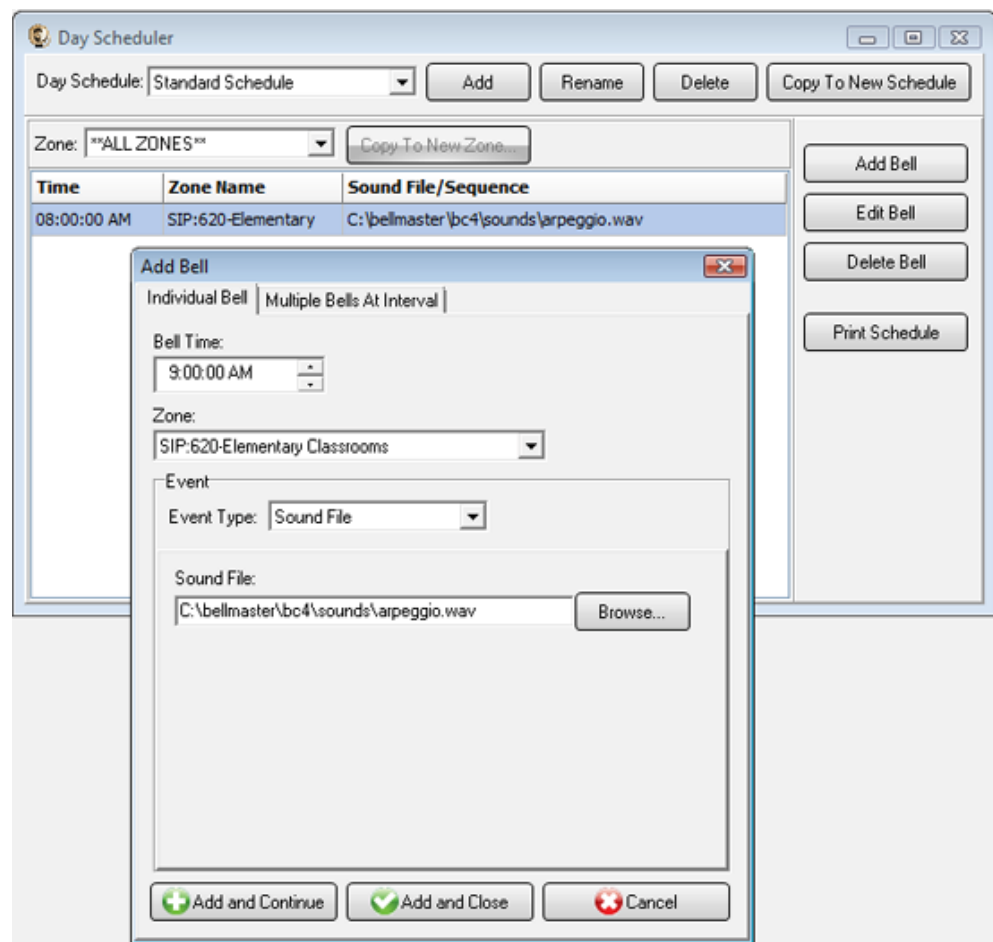
8. Add the new extension to BellCommander:
 - a. Open the BellCommander Device Manager and select SIP Destinations from the Sound Device Type drop-down.
 - b. Enter the SIP Server IP. This should be the IP of the system running Trixbox. Enter the corresponding SIP port. This should normally be 5060. Click the Apply button.
 - c. Click the Add... button under BellCommander SIP Extensions to add the extension that BellCommander will register. Enter the extension number, password (secret from Trixbox), and a local port number. Typically, the default local port number can be used. After adding the extension, the extension should appear in the list with a status of "Registered"
 - d. Click the Add... button under SIP Destinations and add the Trixbox extensions that BellCommander will call.
 - e. Test each SIP destination, by selecting a SIP destination from the SIP Destinations list. Then, click the Browse... button to locate a WAV file and click the Play Audio File button to play the WAV file. BellCommander will then call the extension through Trixbox and play the WAV file.



Scheduling for SIP Extensions:

BellCommander automatically creates a zone for each SIP destination that allows different schedules to be sent to different extensions. To create a schedule, follow the steps below:

1. Create a day schedule. A day schedule represents a single day's 24 hour schedule that can be applied to dates on the BellCommander calendar. To create a Day Schedule:
 - a. Click the Day Scheduler button.
 - b. Click the top Add button to add a new day schedule. Enter a name to identify the schedule, ex. Standard Schedule
 - c. Click the Add Bell button to add a new bell to the schedule. In the Add Bell window,
 - i. Select the time for the bell.
 - ii. Select the zone that the bell should play to. SIP zones will have a name of "SIP:" followed by the extension number and name.
 - iii. For a single sound file select, select "Sound File" for the event type and select a WAV audio file.



2. Assign the day schedule(s) to the Calendar Scheduler. To assign schedules to the Calendar Scheduler:
 - a. Click the Calendar button to view the Calendar Scheduler window.
 - b. Click the Set Default Weekly schedule button to set the default schedule and set the following values:

Weeks in the schedule:

If schedule is the same every week, select “Same schedule every week”.

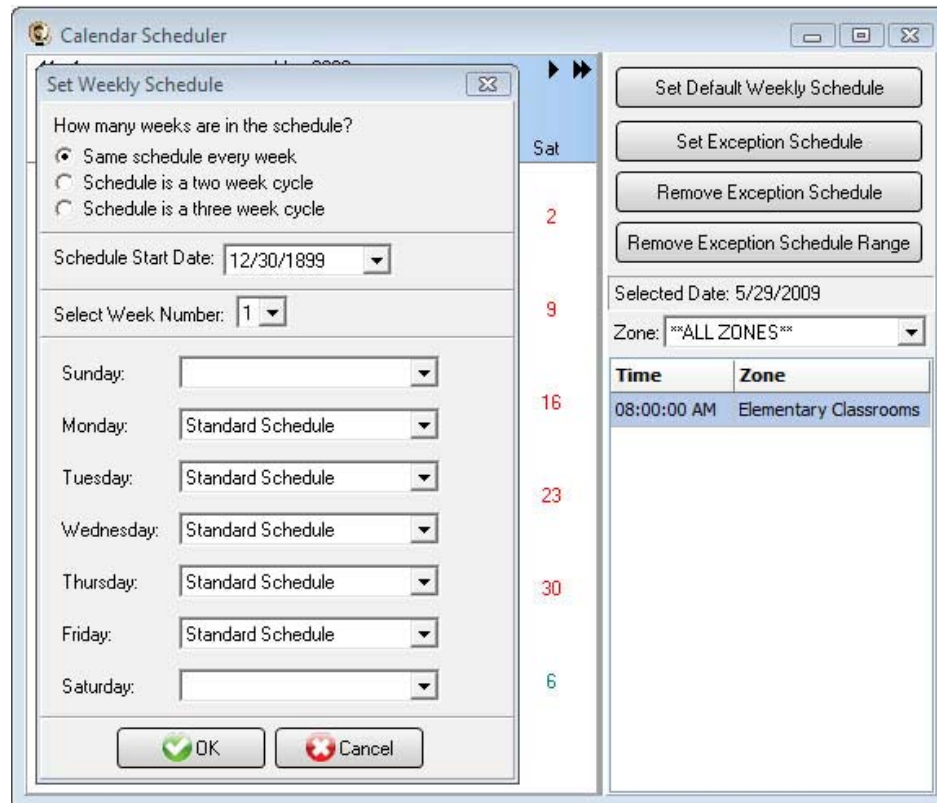
If schedule repeats bi-weekly, select “Schedule is a two week cycle”.

If schedule repeats tri-weekly, select “Schedule is a three week cycle”.

Schedule Start Date – If schedule starts in the future select a future date; otherwise, the default value (12/30/1899) will start the schedule immediately.

Select Week Number – If using a bi-weekly or tri-weekly schedule, this allows the first, second, or third week to be selected for the days of the week listed. Select 1 to program the first week, 2 to program the second week, 3 to program the third week.

Days of the week – Use the drop-down for each day of the to select a schedule. If no audio should be scheduled for the day of the week, leave the day name blank.



- c. To set different schedules by date, add additional schedules in the Day Scheduler and select dates on the calendar and click the Set Exception Schedule button to set different schedules by date.

Special Considerations for SIP Scheduling:

If two or more audio events will be scheduled at the same time, then additional SIP extensions will need to be registered by BellCommander. This will require adding the additional extensions in Trixbox and having BellCommander register the SIP extensions.

SIP Extensions for Emergency Notification

SIP Extensions for Emergency Notification allows Trixbox phones to dial BellCommander for emergency notifications. Emergency notifications loop audio alerts for several weather, school lockdowns, and other emergencies. Emergency notifications can be triggered by clicking emergency buttons in the BellCommander interface or by dialing emergency codes.

To setup emergency notifications:

1. Open the Trixbox Control Panel in admin mode (web-based).
2. Click on PBX on the menu.
3. Click Extensions on the left side of the page.
4. Click Add Extension.
5. Select "Generic SIP Device"
6. In the Add Extension page, enter the following:
User Extension: A number for the extension. Can be any valid extension number.
Display Name: Name to identify the extension as in Trixbox. Can be any name.
SIP Alias: Typically the same as the extension number.
Call Waiting: Disable
Secret: Numeric password that will be used by BellCommander to register the extension.
Click Submit
7. Click Apply Configuration Changes

Add Extension

User Extension	<input type="text" value="900"/>
Display Name	<input type="text" value="BellCommander Ext"/>
CID Num Alias	<input type="text"/>
SIP Alias	<input type="text" value="900"/>

Extension Options

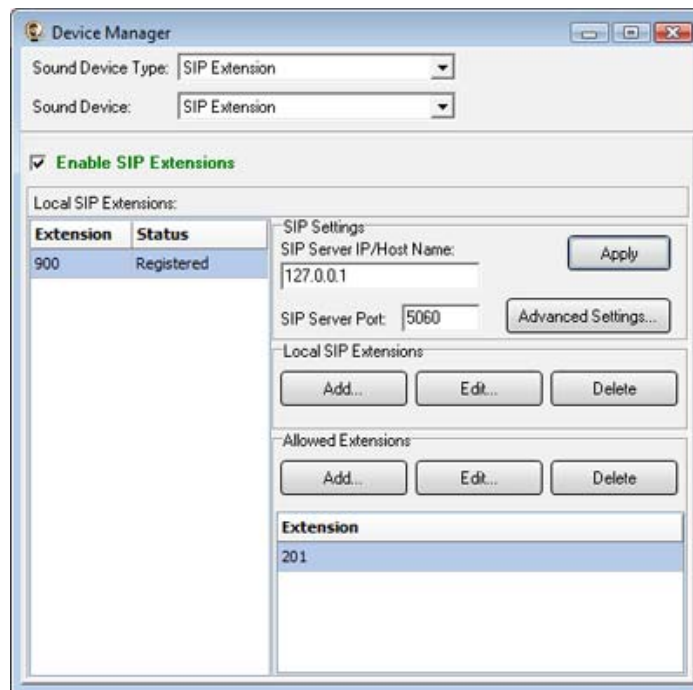
Direct DID	<input type="text"/>
DID Alert Info	<input type="text"/>
Music on Hold	<input type="text" value="default"/>
Outbound CID	<input type="text"/>
Ring Time	<input type="text" value="Default"/>
Call Waiting	<input type="text" value="Disable"/>
Emergency CID	<input type="text"/>

Device Options

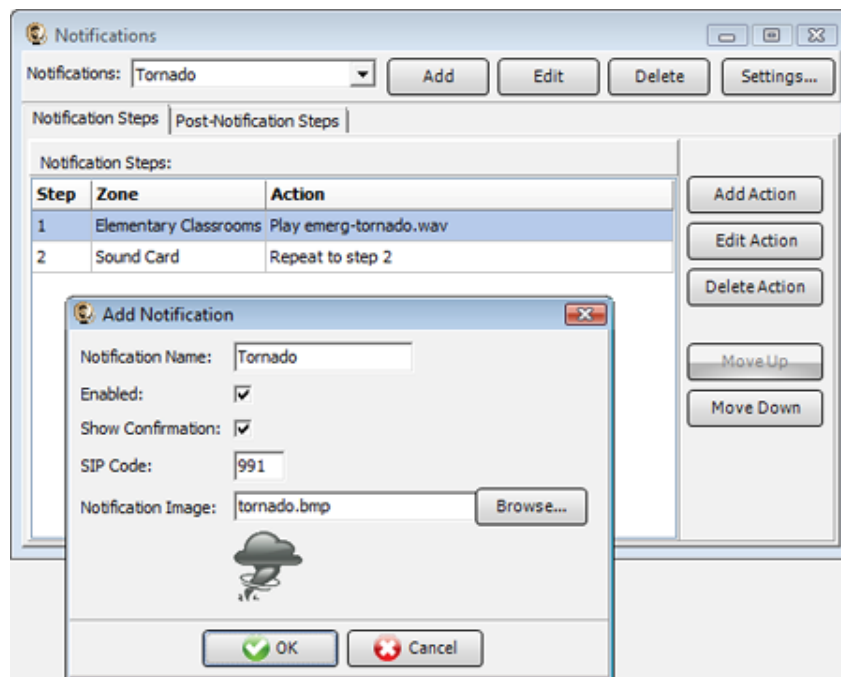
This device uses sip technology.

secret	<input type="text" value="900pass"/>
dtmfmode	<input type="text" value="rfc2833"/>

1. Add SIP extension to BellCommander:
 - a. Open the BellCommander Device Manager by clicking the Devices button.
 - b. In the Sound Device Type drop-down select "SIP Extension"
 - c. Check "Enable SIP Extensions"
 - d. Enter the Trixbox server IP and port number. Port number should normally by 5060.
 - e. Click the Apply button.
 - f. Add a SIP extension for BellCommander to register:
 - i. Click the Add... button under Local SIP Extensions.
 SIP Extension - Extension that was added to Trixbox.
 Extension Password – Password for the extension that was added to Trixbox.
 Local Port Number – Can typically use the default value
 Map To Zone – Leave this blank for emergency notification.
 SIP Server Options – Select "Connect to default SIP server"
 - ii. After adding the extension, the extension should appear in the Local SIP Extension list with a status of "Registered"
 - g. Add the extensions that are allowed to call BellCommander for emergency notification.
 - i. Click the Add... button under Allowed Extensions.
 - ii. Enter a Trixbox extension that will be allowed to call BellCommander.
 - iii. Repeat for additional extensions. BellCommander is licensed by the number for allowed extensions, so the number of allowed extensions may be restricted by the license.



2. Define emergency notifications in BellCommander:
 - a. Click the Notifications button to view the Notifications window.
 - b. Click the top Add or Edit button to add or edit a notification. For the example, we'll edit the tornado notification.
 - c. In the edit window, note the SIP code. This is the code that the phone user should dial to trigger the emergency notification. The Show Confirmation option is for clicking notifications in the BellCommander interface. If Show Confirmation is checked, a message will popup to request confirmation of an emergency alert.
 - d. Assign actions to the emergency notification. Use the Add Action and Edit Action to add and edit actions in the alert scripts. Typically, a sound file would be played and looped. In the action, the zone should be set to a zone that broadcasts to all areas that should receive the notification.



3. To trigger an emergency notification by phone, first call the BellCommander extension, in the example above this would be 900. Wait for BellCommander to answer, then dial the emergency code followed by the # key. In the example above 991#. To stop the alert, dial 999# while connected to BellCommander. The alert can also be stopped by dialing the BellCommander extension again and entering 999#.