

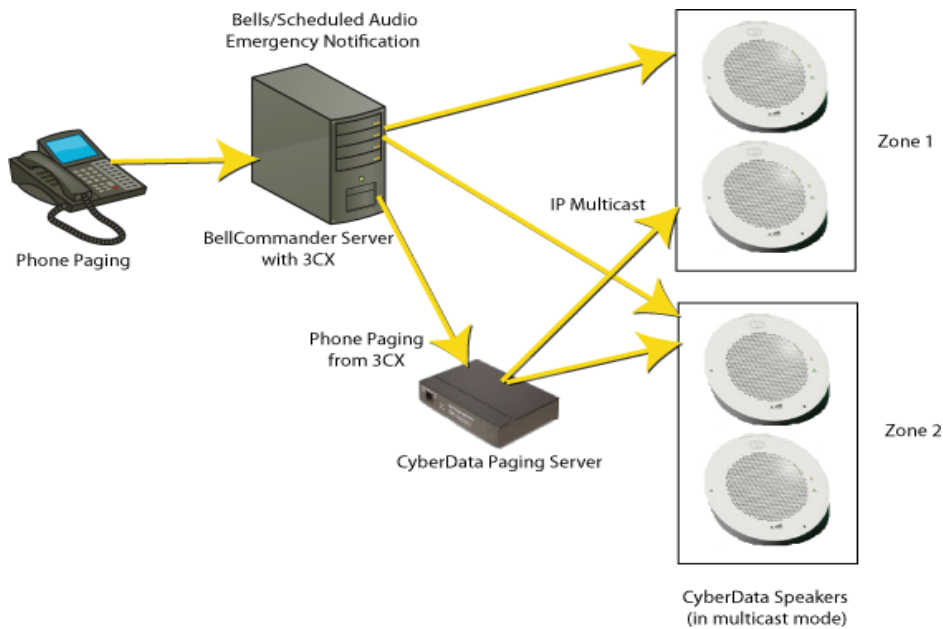
BellCommander Configuration Guide – CyberData and 3CX

Overview: BellCommander work with 3CX 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.

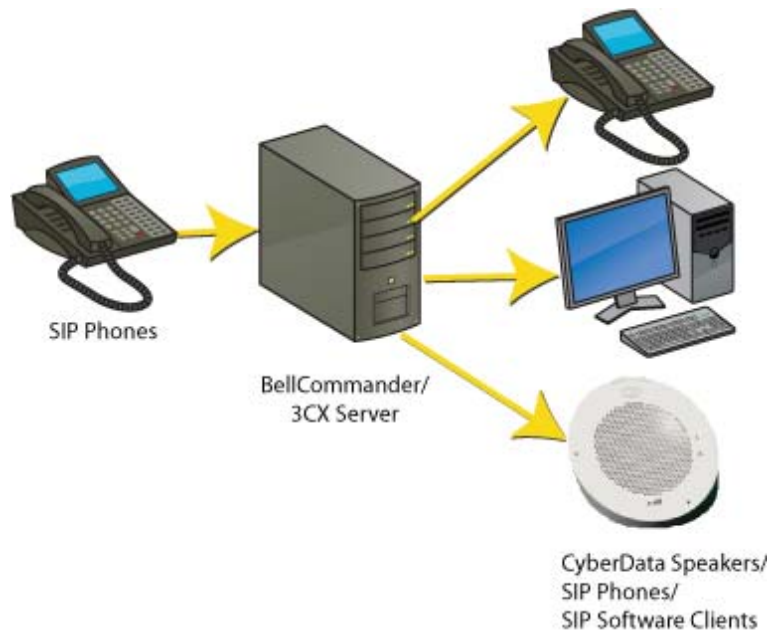
In this configuration, 3CX can be installed on the same Windows server with BellCommander to reduce server hardware costs. 3CX may also be installed on a separate Windows server.



SIP Configuration


In the SIP Configuration of BellCommander, BellCommander and 3CX are typically installed on the same Windows server and BellCommander works with 3CX to provide bells, paging, and emergency notification. In this configuration, paging extensions can be defined in the licensed versions of 3CX that will allow audio to broadcast to CyberData speakers and to SIP phones at the same time. **CyberData V2 products are recommended for this configuration, since V1 products may not have clear audio.**

In this configuration of BellCommander, BellCommander registers with 3CX as a SIP extension and it calls paging 3CX paging extensions to reach different paging group. CyberData speakers should be registered in SIP mode with 3CX 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 3CX in this configuration and users can use a SIP phone to call a 3CX 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"/>

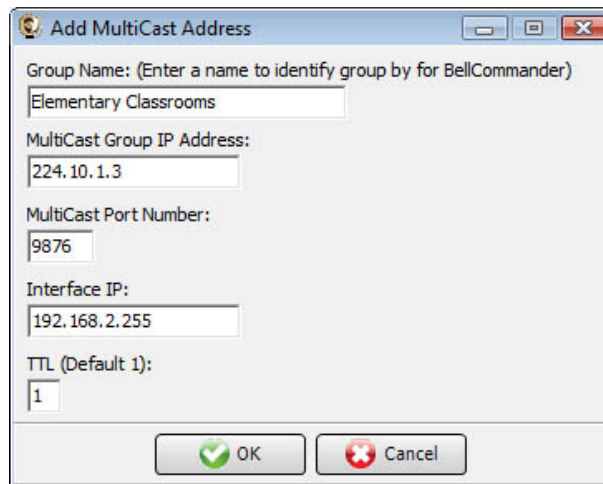
	Multicast IP Address	Port: 2000-65535	Priority: 1-8	MGROUP Name	Beep
MG-1	224.10.1.2	9876	5	BC-All Call	<input type="checkbox"/>
MG-2	224.10.1.3	9876	4	BC-Elementary Classrooms	<input type="checkbox"/>
MG-3	224.10.1.4	9876	3	Paging - Elementary	<input checked="" type="checkbox"/>
MG-4	224.10.1.5	9876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



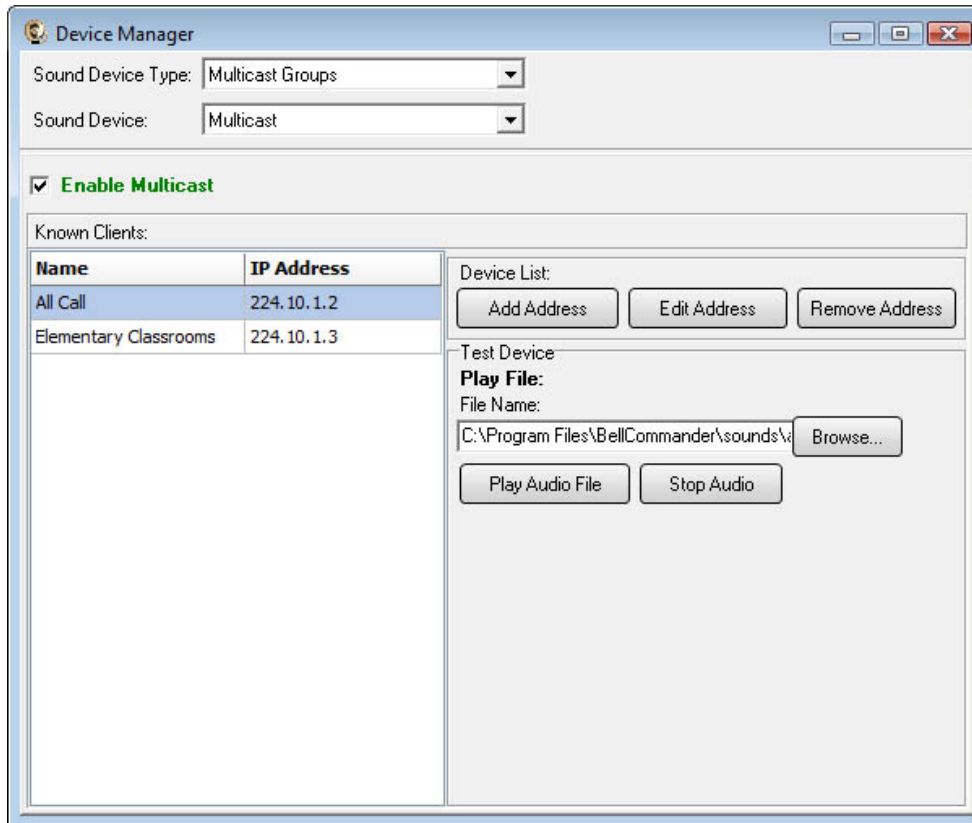
The screenshot shows a dialog box titled "Add MultiCast Address". It contains the following fields and values:

- 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 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

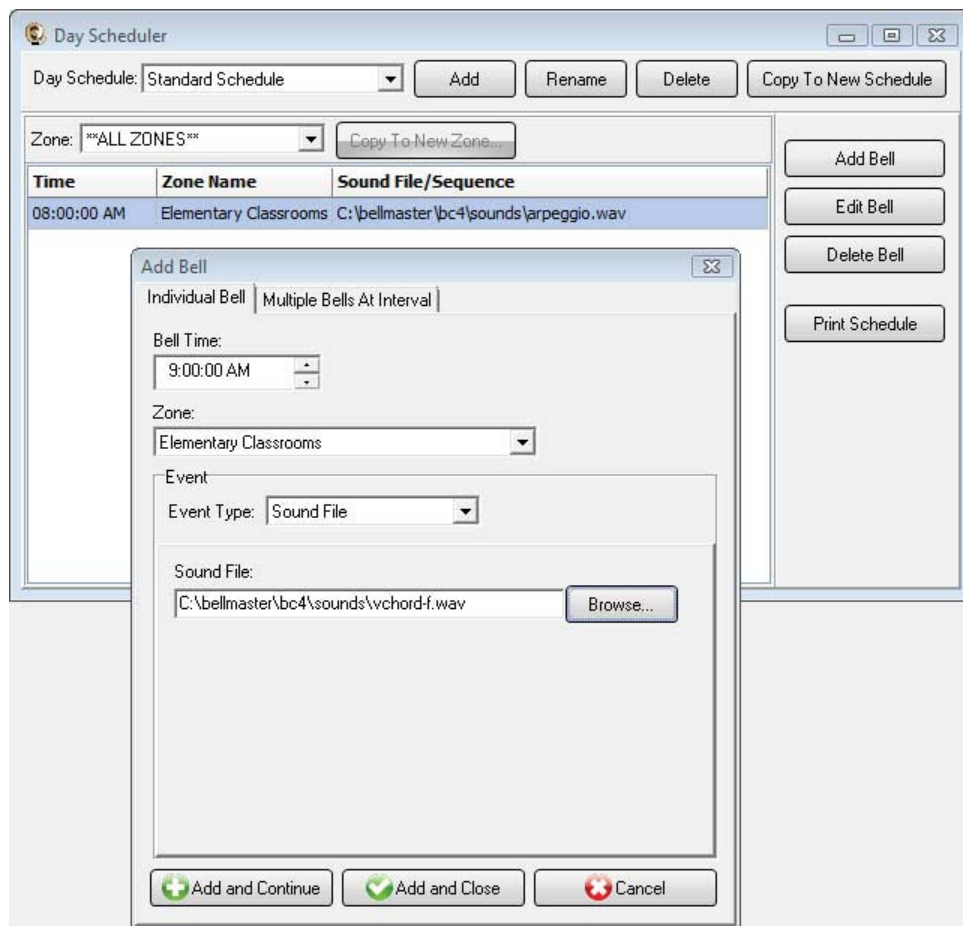
5. Test each multicast address, by selecting the multicast group from the list. Then, click the Browse... button to locate a WAV file and click the Play Audio File button to play the WAV file. The WAV file should play after the button is pressed.



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”.

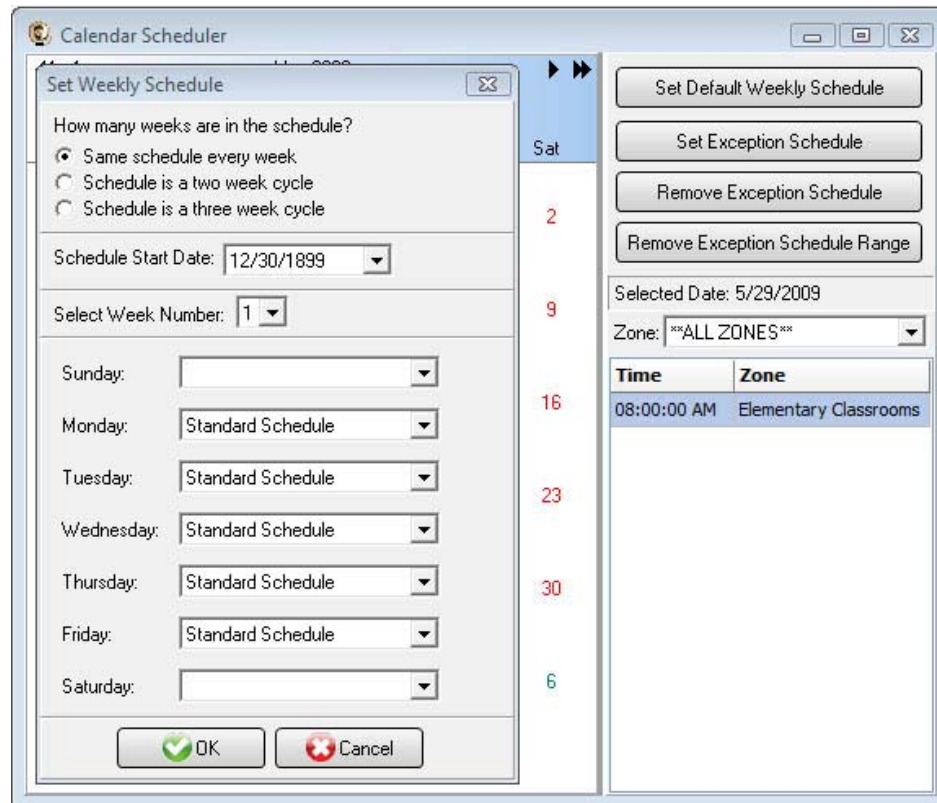
If schedule repeats bi-weekly, select “Schedule is a two week cycle”.

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 3CX and to BellCommander. This extension will allow BellCommander to make outgoing calls through 3CX to CyberData speakers and IP phones. To add the extension,

1. Open the 3CX Control Panel (web-based).
2. Under Extensions, click "Add"
3. In the Add Extension page, enter the following:
Extension Number: A number for the extension. Can be any valid extension number.
First Name: Name to identify the extension as in 3CX. Can be any name.
ID: Typically the same as the extension number.
Password: Numeric password that will be used by BellCommander to register the extension.

3CX breakfree
with a software based PBX for Windows

HOME | LOGOUT

Add Extension

Create an extension on 3CX Phone System by completing the form below. [More >](#)

User Information

Specify extension number, name, and email address for voicemail notifications and fax delivery. [More >](#)

Extension number: 500

First Name: BellCommander SIP

Last Name:

Email address:

Authentication

ID & Password fields must match the ID & Password set on the SIP phone. [More >](#)

ID: 500

Password: ••••••

Voice Mail Configuration >>>

Destination Unreachable / Forwarding >>>

Other options >>>

Provisioning >>>

< Back Next >

Phone System
Line Status
Server Status
Active Calls

Extensions
Add
Manage

Lines
Add PSTN
Add VOIP
Add DID
Add 3CX-to-3CX bridge
Manage

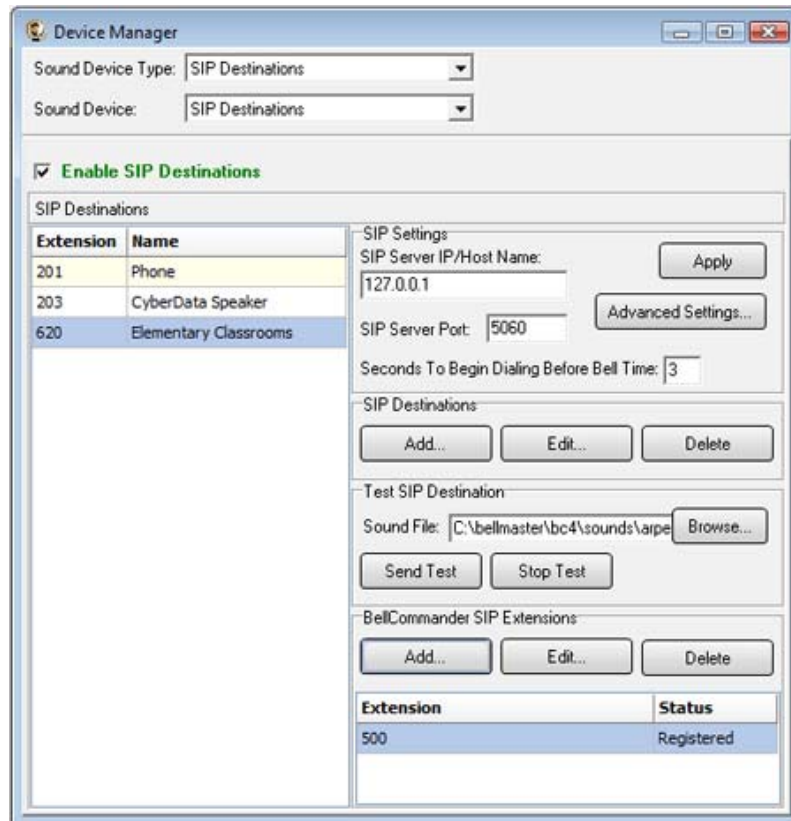
Outbound Rules
Add Rule
Manage

Digital Receptionist
Add
Manage

Advanced
Add Ring Group
Add Call Queue
Manage

General
Admin Credentials
General Settings
Phone book
Get 3CX VOP Client
Activate Licence
System prompts
Versions/Updates
How to Buy
Support

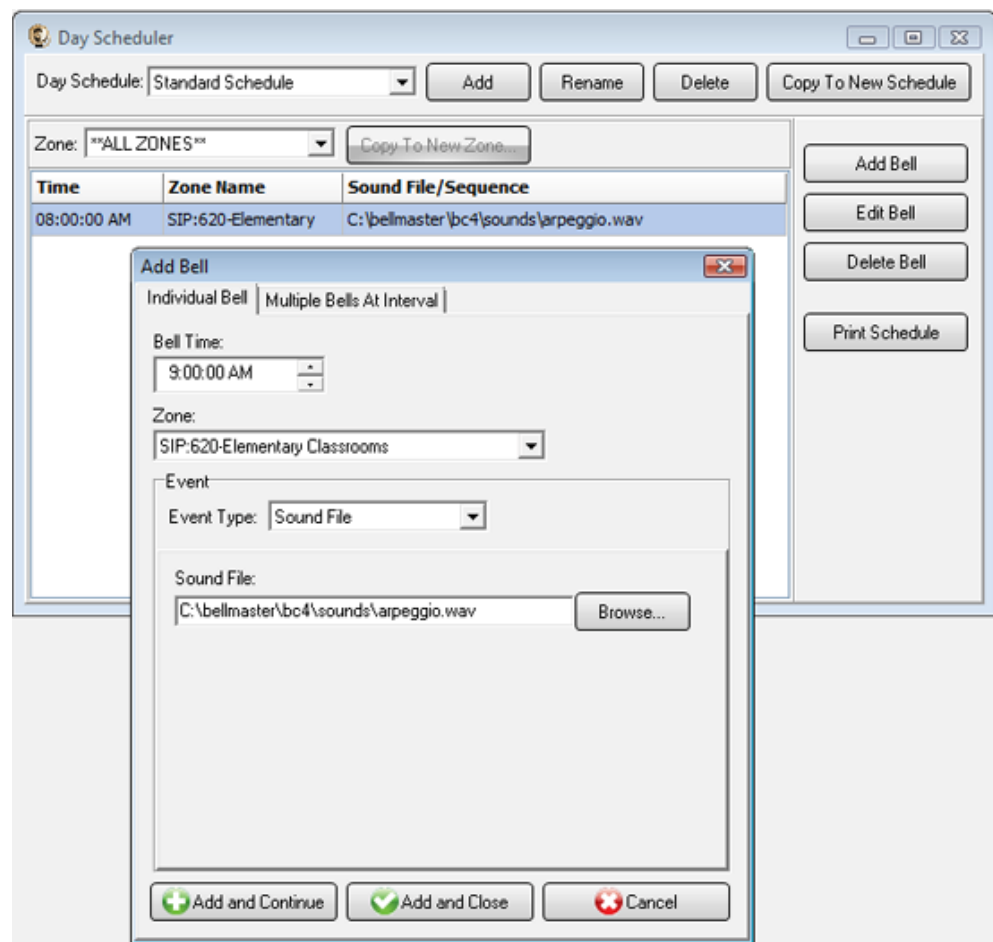
4. Add the new extension to BellCommander:
 - a. Open the BellCommander Device Manager and select SIP Destinations from the Sound Device Type drop-down.
 - b. Enter the SIP Server IP. This should be 127.0.0.1 if running 3CX on the same server as BellCommander or enter the 3CX server IP/hostname if running 3CX on a different server. 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 (from 3CX), 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 3CX 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 3CX 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:

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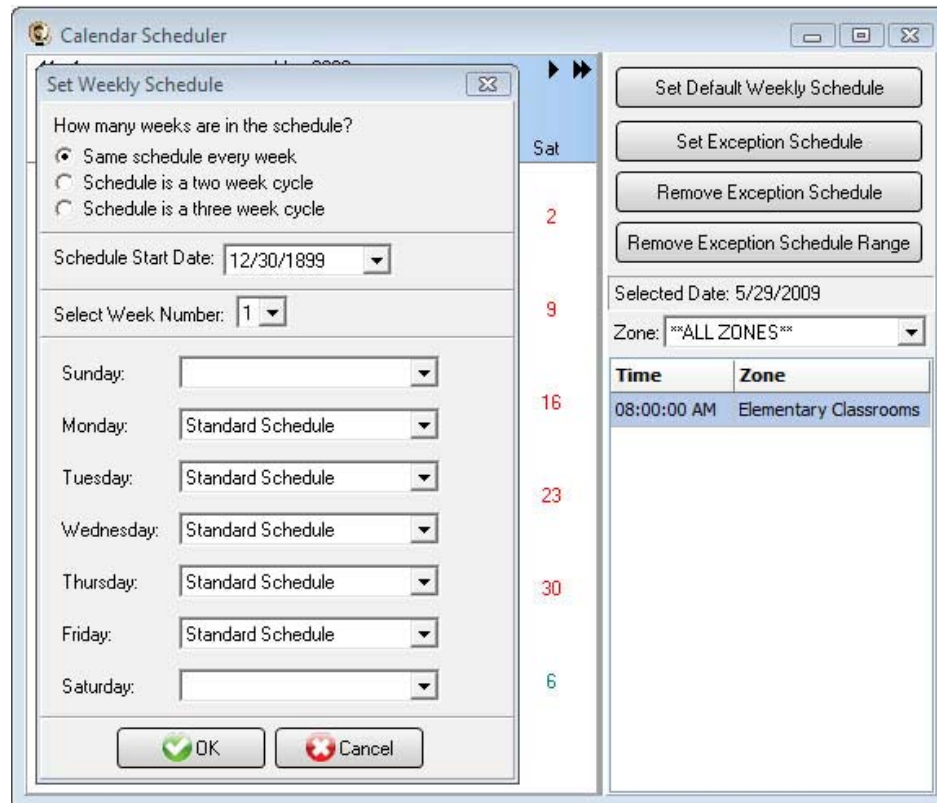
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Days of the week – Use the drop-down for each day of the to select a schedule. If no audio should be scheduled for the day of the week, leave the day name blank.



- 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 3CX and having BellCommander register the SIP extensions.

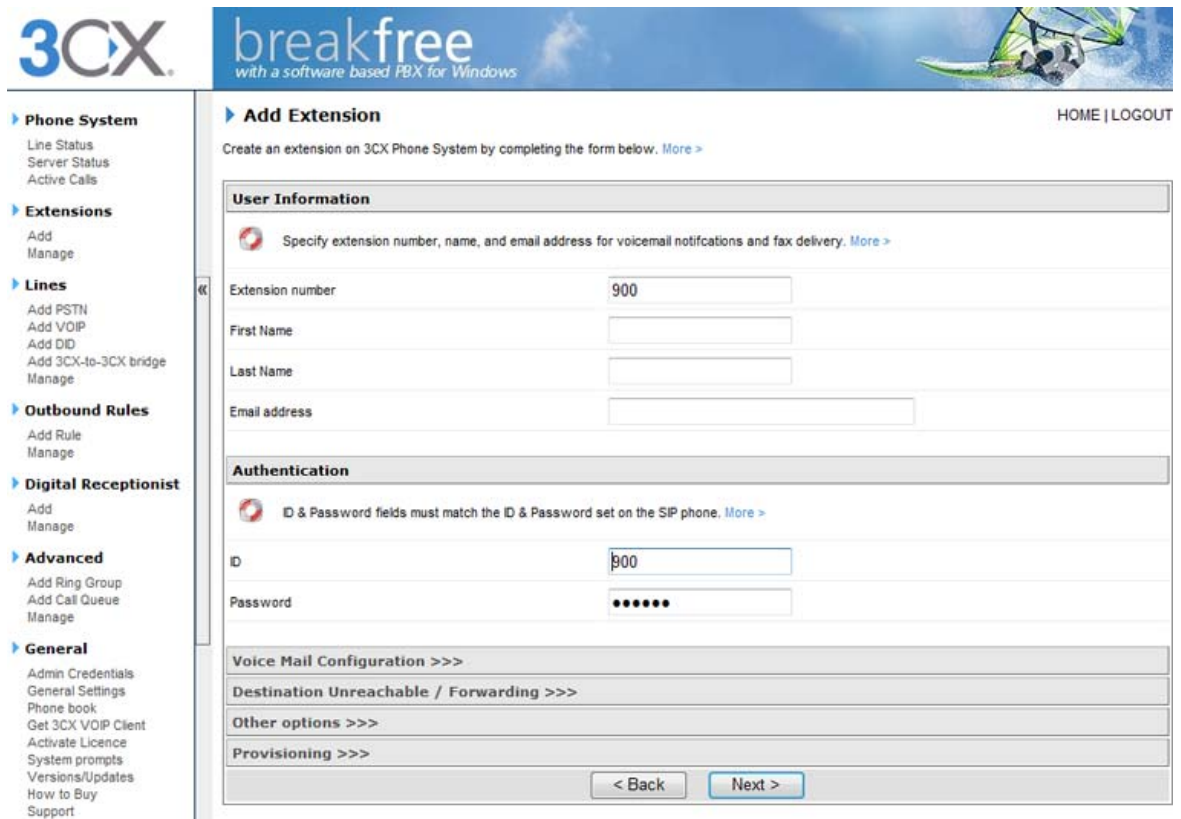
A licensed version of 3CX is required to setup paging groups. The free version of 3CX does not support paging groups.

SIP Extensions for Emergency Notification

SIP Extensions for Emergency Notification allows 3CX 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.

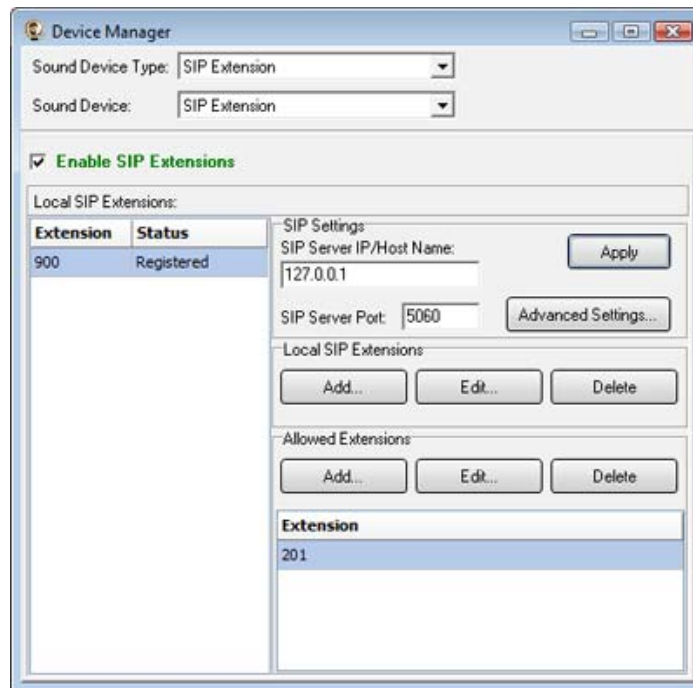
To setup emergency notifications:

1. Add a new extension to 3CX. BellCommander will register the extension and receive calls from 3CX phones. Use the default options for the extension

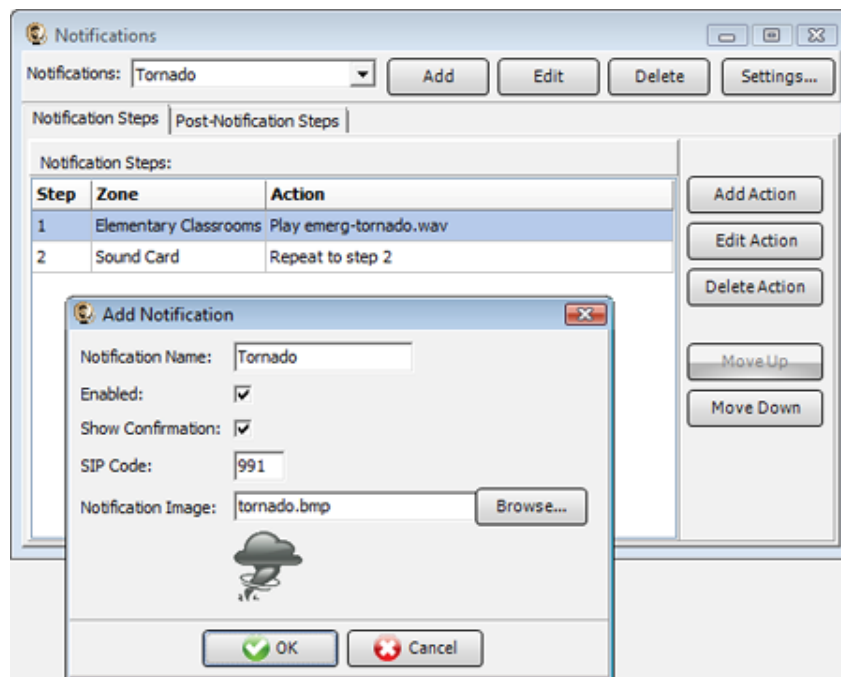


The screenshot displays the 3CX BreakFree web interface. The top header features the 3CX logo on the left, the 'breakfree' logo with the tagline 'with a software based PBX for Windows' in the center, and a 'HOME | LOGOUT' link on the right. A left-hand navigation menu lists various system management options such as 'Phone System', 'Extensions', 'Lines', 'Outbound Rules', 'Digital Receptionist', 'Advanced', and 'General'. The main content area is titled 'Add Extension' and includes a sub-header 'Create an extension on 3CX Phone System by completing the form below. More >'. The form is organized into several sections: 'User Information' with fields for 'Extension number' (containing '900'), 'First Name', 'Last Name', and 'Email address'; 'Authentication' with fields for 'ID' (containing '900') and 'Password' (masked with dots); and three expandable sections: 'Voice Mail Configuration >>>', 'Destination Unreachable / Forwarding >>>', and 'Provisioning >>>'. At the bottom of the form are '< Back' and 'Next >' buttons.

2. 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 3CX server IP and port number. If 3CX is running on the same server with BellCommander, enter 127.0.0.1
 - 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 3CX.
 Extension Password – Password for the extension that was added to 3CX.
 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 3CX 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.



3. 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.



4. 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#.