# BellCommander Configuration Guide - Cisco CallManager Express

Overview: BellCommander integrates with Cisco CallManager Express systems (CME), including UC500 series systems, to provide school bells, automated paging, and emergency notification.   The higher-end CallManager systems for UCM do not support native paging as outlined in this document and only individual phones or endpoints can be called in CallManager.

Configuration Guide

In this configuration of BellCommander, the BellCommander software is used for audio scheduling and emergency notification. The BellCommander software is installed on a Windows PC or server and registers SIP extensions with CME for outbound calling for scheduled paging and inbound calling for emergency notification.   BellCommander sends scheduled audio pages for applications including school bells, factory work break notification horns, voice announcements, and more. When BellCommander sends a page it uses SIP to call a paging extension in CallManager which sends multicast to Cisco phones and CyberData speakers:

BellCommander
Server

Cisco CallManager Express Server

Cisco Phones/
CyberData Speakers
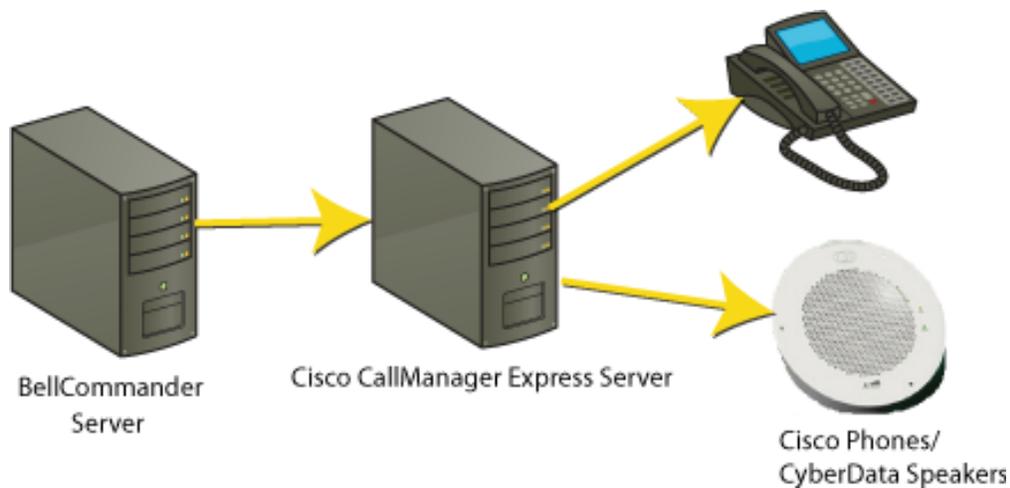
Technical Configuration

For the SIP configuration of BellCommander with CME, an extension will need to be added to CME and to BellCommander. This extension will allow BellCommander to make outgoing calls through CME to CyberData speakers and Cisco phones. To add the extension, update the CME configuration with a new SIP extension. An example configuration is shown below with important lines in bold:

```
voice service voip
allow-connections h323 to h323
allow-connections h323 to sip
allow-connections sip to h323
allow-connections sip to sip
supplementary-service h450.12
fax protocol none
modem passthrough nse codec g711ulaw
sip
registrar server expires max 1200 min 300
!
voice class codec 1
codec preference 1 g711ulaw
codec preference 2 g729r8
!
voice register global
mode cme
source-address 10.1.1.1 port 5060
max-dn 20
max-pool 10
authenticate register
time-format 24
date-format D/M/Y
voicemail 90
file text
create profile sync 0246360689430547
!
voice register dn 1
number 40
allow watch
name BellCommanderOutbound
label 40
mwi
!
voice register pool 1
id mac 000E.08DD.EAAD
number 1 dn 1
dtmf-relay sip-notify
username 500 password bcpasswd
codec g711ulaw
```

The voice register sections define the SIP extension for BellCommander. The mac address in the "id mac" line should be changed to the mac address of the PC or server running BellCommander. Make sure to include the lines with g711ulaw, since BellCommander will use g711ulaw to send audio to CME and to receive call from CME. Also, note the username and password, since they'll be needed in BellCommander.

Add paging extensions to the CME configuration:

CME supports multicast to groups of phones configured in SCCP mode. However, the paging feature does not work with phones configured in SIP mode.   To configure a paging group in CME, first create the group:

```
router#show running-config
ephone-dn 14
 number 620
 name BellGroup
 paging ip 224.10.1.2 port 9876
```

In this configuration, the number is the number that will be dialed to reach the group. The paging ip is a multicast address that will be used for paging to the phones.

Next, phones will need to be added to the paging group. To add phones, use the following configuration:

```
router#show running-config
ephone 12
 mac-address 000d.1234.0efc
 button 1:1 2:6
 paging-dn 14
ephone 15
 mac-address 000d.4132.f7e4
 button 1:4 2:5
 paging-dn 14
```

For more detailed instructions, see the VoIP Calling Features guide from Cisco Press at
http://www.ciscopress.com/articles/article.asp?p=401648&seqNum=5

**Add the new extension to BellCommander:**

1. Open the BellCommander Device Manager and select SIP Destinations from the Sound Device Type drop-down.
2. Enter the SIP Server IP. This should be the IP CME system. Enter the corresponding SIP port. This should normally be 5060. Click the Apply button.
3. Click the Advanced Settings button. **Change the RTP Packet Size to 20 milliseconds**. 30 milliseconds can also be tried to determine the optimal configuration.
4. Click the Add… button under BellCommander SIP Extensions to add the extension that BellCommander will register. Enter the extension number, password (from the CME configuration), 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"
5. Click the Add button under SIP Destinations and enter the paging group extension that was added to CME.
6. To send a test, select the SIP Destination and Browse for a WAV audio file. Then, click the Send Test button.
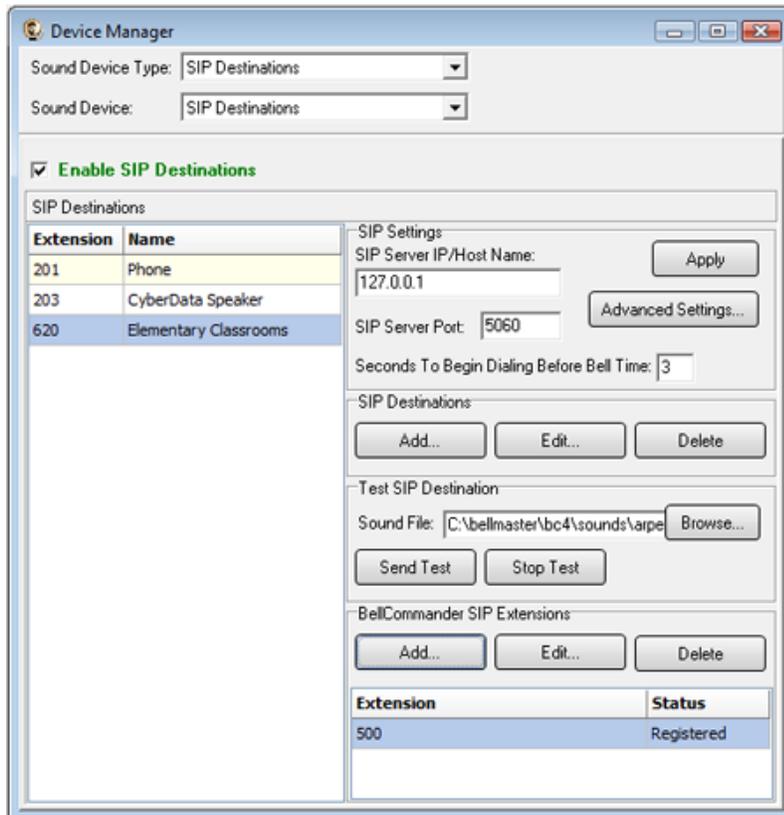
Scheduling for SIP Extensions:

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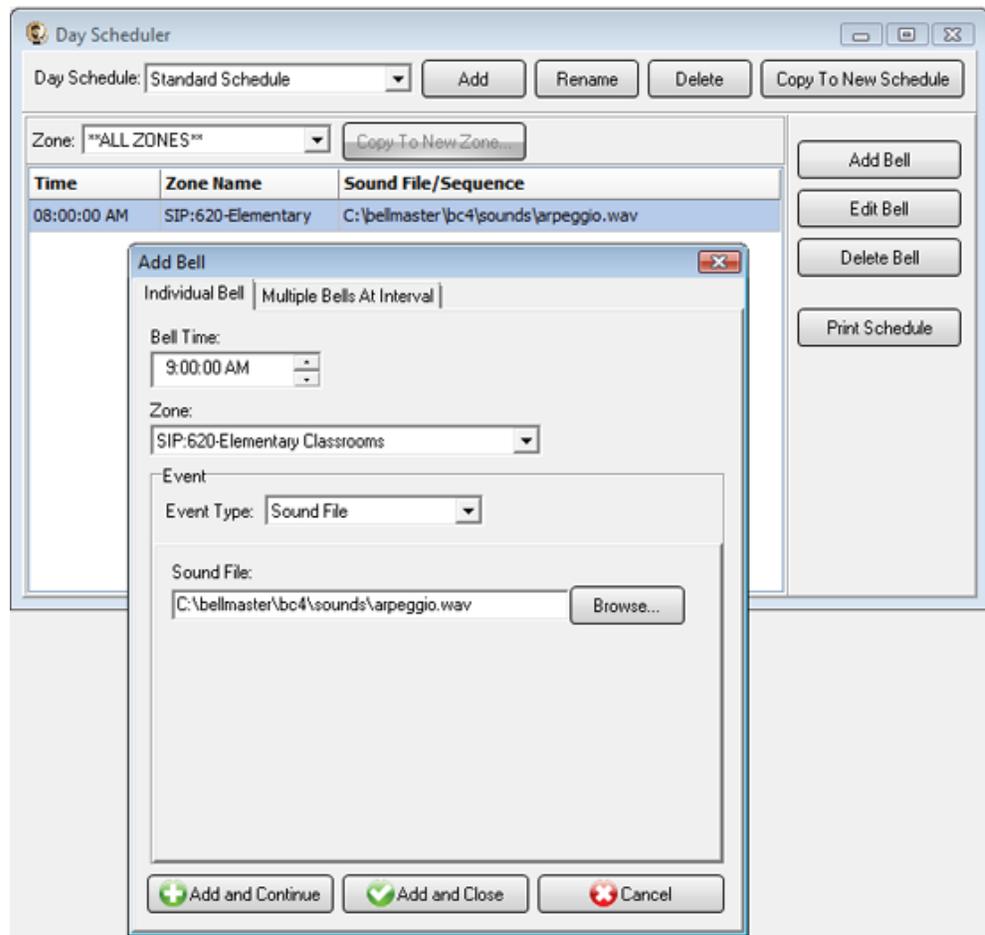
2. Assign the day schedule(s) to the Calendar Scheduler. To assign schedules to the Calendar Scheduler:
    a. Click the Calendar button to view the Calendar Scheduler window.
    b. Click the Set Default Weekly schedule button to set the default schedule and set the following values:

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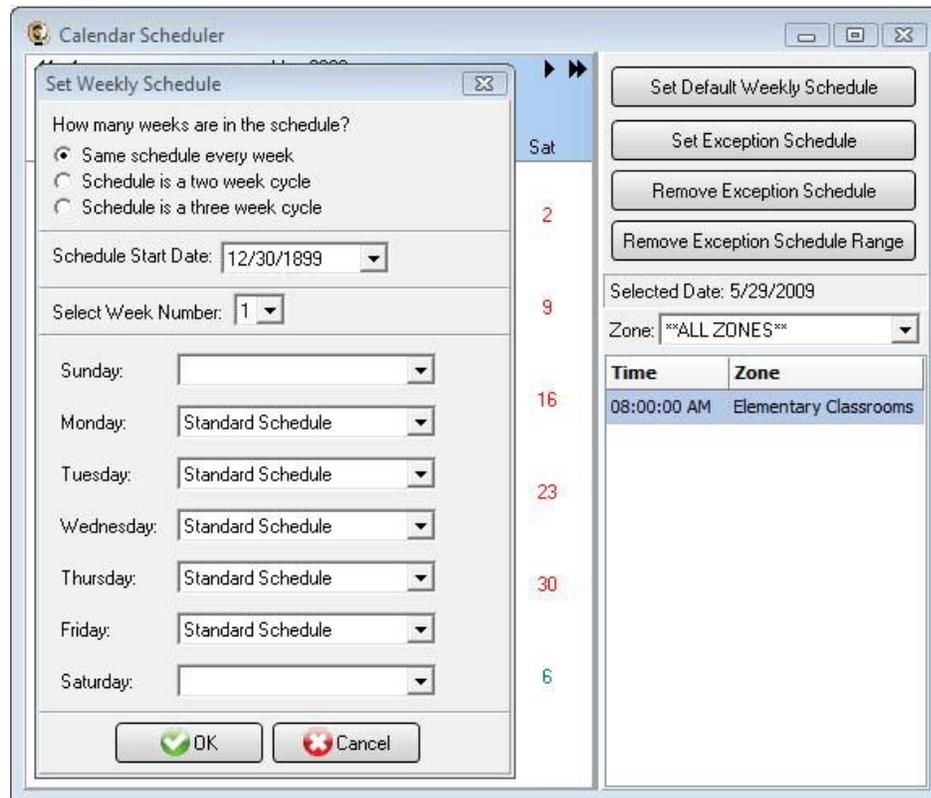
    c. To set different schedules by date, add additional schedules in the Day Scheduler and select dates on the calendar and click the Set Exception Schedule button to set different schedules by date.

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 CME and having BellCommander register the SIP extensions.

CyberData Setup Guide

CyberData provides SIP/multicast endpoints, including speakers and amplifiers for paging applications. With the CME configuration, the CyberData speakers would be configured in multicast mode.

1. Install the latest firmware for the CyberData devices.
2. Set CyberData speakers/amplifiers in MGROUPS mode.
3. Under MGROUPS settings, add the multicast address and port corresponding to a paging group defined in CME.


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. In a CME configuration, each multicast address should have a corresponding paging group in CME.
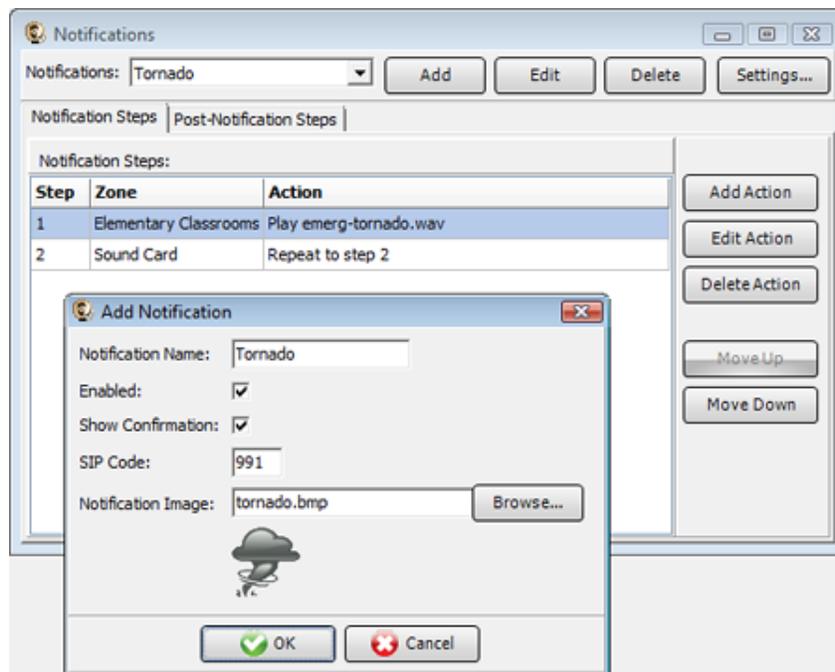
SIP Extensions for Emergency Notification

SIP Extensions for Emergency Notification allow Cisco 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. Create a new SIP extension in CME.
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 CME 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 CME.
           Extension Password – Password for the extension that was added to CME.
           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 CME 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.
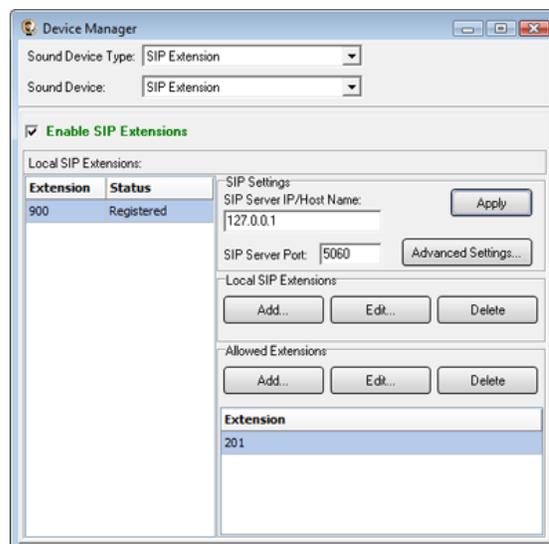
3. Define emergency notifications in BellCommander:
    a. Click the Notifications button to view the Notifications window.
    b. Click the top Add or Edit button to add or edit a notification. For the example, we'll edit the tornado notification.
    c. In the edit window, note the SIP code. This is 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#.