



Grandstream Networks, Inc.

UCM6xxx Series IP PBX

Emergency Calls Guide



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INTRODUCTION

On critical situations, having the ability to make emergency calls to ask for help is a must for any telephony system, whether it's public telephony system such as GSM network or PSTN network, or the private local telephony system managed by the PBX on premises.

Grandstream's enterprise-grade IP-PBX provides users with the ability to manage such type of calls to help users deal with critical situations and make emergency calls for help. These calls need to have higher priority than regular calls, categorized depending on the emergency service called and the ongoing situation as well as the possibility to notify related personal about the situation (guards, first aid ... etc.).

UCM6xxx series provide the administrator with all tools necessary to configure and adapt the PBX with such situations, making it possible for users to easily press buttons or dial codes/numbers to make emergency calls.

We will cover on this guide all needed steps to configure emergency calls on UCM IP-PBX series.



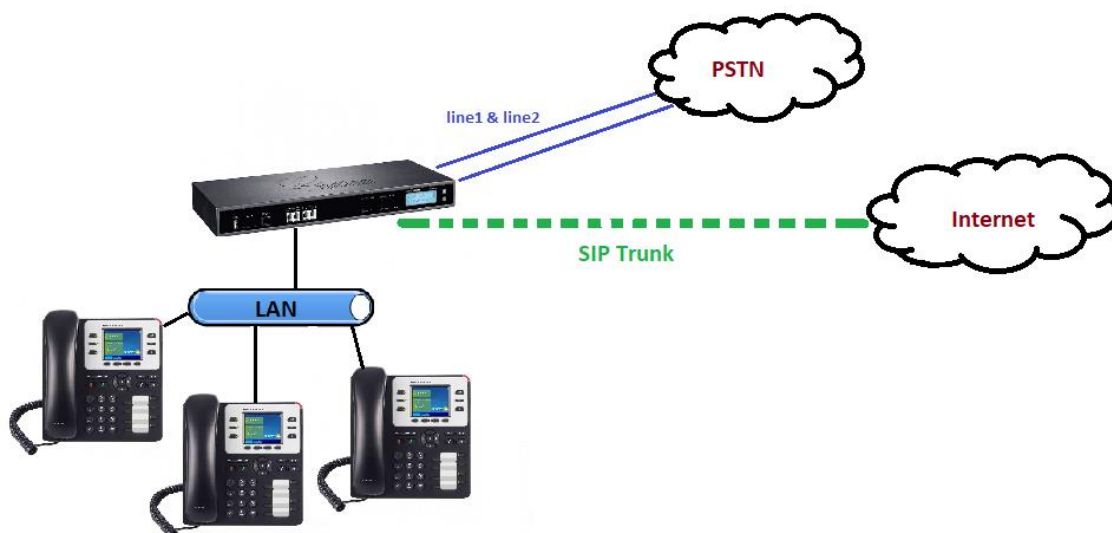
SCENARIO OVERVIEW

To illustrate the functionality of emergency calls on the UCM6xxx series, we will be using the following scenario where company ABC has already deployed a UCM6510 as their main PBX system along with GXP21XX phones for users.

Company ABC uses a SIP trunk as their main exit point and two PSTN lines as backup in case they lose internet connection.

Users are allowed to make external calls depending on the established routing policy (permissions, privileges, PIN codes ...etc) while respecting the following requirements:

- All users should be able to dial emergency number at any time without any restrictions.
- The system admin would be receiving email alert notification about the made emergency calls.
- Users with extension 2001, 2002 and 2003 should receive vocal notification when an emergency call has been initiated.
- Emergency calls should go over the PSTN lines 1 and 2.
- If there is an ongoing call on the PSTN line, the system should drop it when there is an emergency situation to connect the person who dialed the number with the emergency service.
- Users are only allowed to dial following emergency numbers: 911, 811 and 711 with the first one having the highest priority and the last the least.



CONFIGURATION STEPS

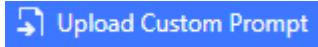
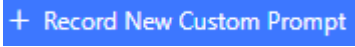
In the following sections, we will be covering all necessary steps to configure the system to fulfill the requirements discussed on the scenario overview section. First, we need to setup the prompts that we will be played to the users when someone dials an emergency number.

Note: If no custom prompt is configured, the PBX will play the default one.

Customize Notification Prompts

In order to create a custom prompt that will be used as notification when an emergency call is initiated, users need to log to the web administration page of the UCM under “**PBX Settings** → **Voice Prompt** → **Custom Prompt**” then they have two choices:



1. Upload a pre-recorded prompt by pressing the button , but the file should respect the following specs:
 - PCM encoded.
 - 16 bits.
 - 8000Hz mono.
 - In .mp3 or .wav format; or raw/ulaw/alaw/gsm file with .ulaw or .alaw suffix.
 - File size under 5M.
2. Record a new custom prompt by clicking on , then select the recording station on which you want to record.

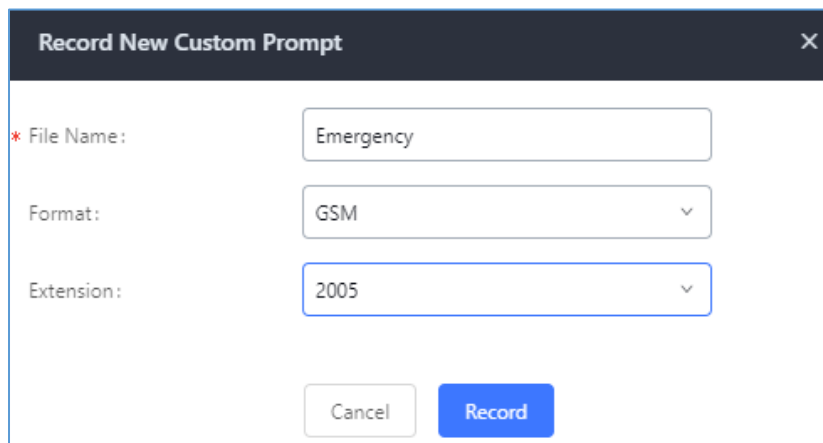


Figure 1: Recording Custom Prompt

Now that the custom prompt is ready, we will be using it as vocal notification to some users, but what about the system admin who usually received notifications via email?

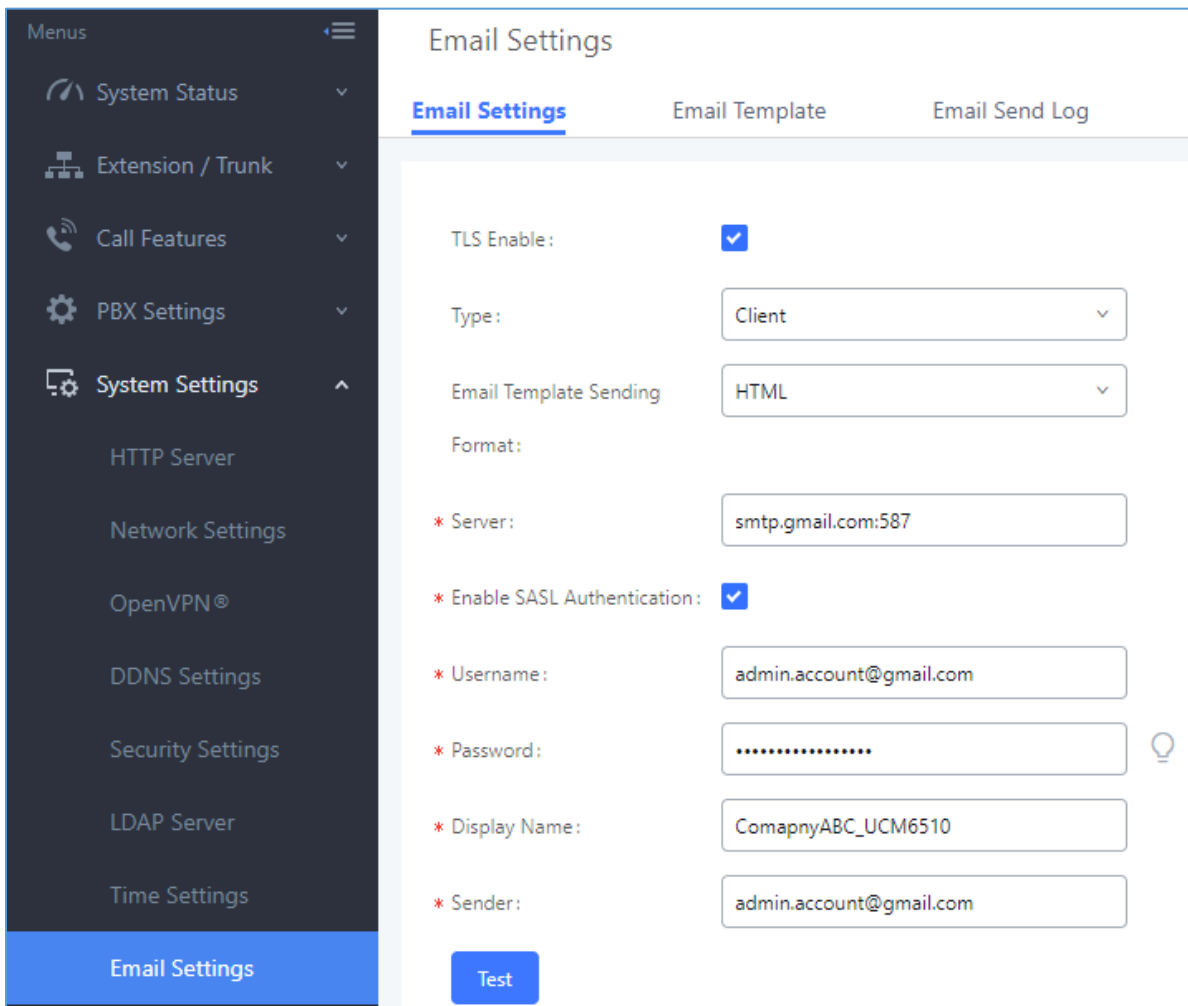
For that we will need to setup alert events and enable email notification when emergency calls occur to notify the administrator(s) about the situation.

Email Notification

To configure and enable email notification there are basically two easy steps.

Step 1: Configure Email Settings on the PBX.

To setup email settings on the UCM, log into the web UI under “**System Settings → Email Settings**” and set the parameters to send emails via the PBX. Users have two choices (either smtp client or MTA ‘transfer agent’). Below is a screenshot of configuration of SMTP client used with google mail (Gmail).



Email Settings	
Label	Value
TLS Enable:	<input checked="" type="checkbox"/>
Type:	Client
Email Template Sending	HTML
Format:	
* Server:	smtp.gmail.com:587
* Enable SASL Authentication:	<input checked="" type="checkbox"/>
* Username:	admin.account@gmail.com
* Password:
* Display Name:	ComapnyABC_UCM6510
* Sender:	admin.account@gmail.com

Figure 2: Email Settings Sample

After this, users can press the **Test** button in order to verify and confirm that the configured email settings are valid and working fine.

Notes:

- Users have the ability also to customize the emails that will be sent by the UCM under the tab “Email Template” for multiple tasks (Fax Sending, CDR, Alert Events ...etc).
- Users can check the email send logs under “Email Send Log” tab to view the history of the emails that where sent by the UCM.

Step 2: Enable Alert notification for Emergency calls.

Next, we need to enable the alert event for the emergency calls as well as email notification or this type of events. First, make sure to configure the alert contacts under the menu “**Maintenance → System Events → Alert Contact**” as shown below.



System Events

[Alert Log](#) [Alert Events List](#) [Alert Contact](#)

Super Admin Email : +

Admin Email : +

Email Template : [Email Template](#)

Figure 3: Alert Contacts Configuration

After this, users need to enable the alert notification for emergency calls under « **Alert Events List** » tab.


















Alert Log	<u>Alert Events List</u>	Alert Contact
<input type="checkbox"/>	System Update	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	System Crash	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF 
<input type="checkbox"/>	Register SIP failed	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	Register SIP trunk failed	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	Restore Config	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	User login success	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	User login failed	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	SIP Internal Call Failure	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	SIP Outgoing Call through Trunk Failure	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	Fail2ban Blocking	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	SIP Lost Registration	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	SIP Peer Trunk Status	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	User Login Banned	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	External Disk Usage	<input type="checkbox"/> OFF <input type="checkbox"/> OFF 
<input type="checkbox"/>	Emergency Calls	<input checked="" type="checkbox"/> ON <input checked="" type="checkbox"/> ON 

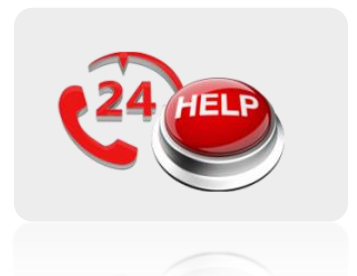
Figure 4: Activate Alert Events

Adding Emergency Numbers

On this section we provide the steps to configure the different emergency numbers that users in company ABD are allowed to dial and set the priority for each one as described on the requirement sections.

We assume that the admin has already configure the trunks and inbound/outbound routing policy to send calls to the external networks (PSTN and ITSP). If you need details about those configurations you can check the following how to guides:

- [Managing Outbound and Inbound calls on UCM.](#)
- [SIP Trunk Configuration Guide.](#)
- [Analog Trunk Configuration Guide.](#)



To configure emergency numbers, users need to follow below steps:

1. Navigate on the web GUI under “**Call Features → Emergency Calls**”.
2. Click on **+ Add** to add a new emergency number.
3. Configure the required fields “Name, Emergency Number and Trunk(s) to be used to reach the number”.
4. Set the Emergency level for the number (ex: **Significantly Urgent** was used for 911 on this case)
5. Save and apply the configuration.

The screenshot shows a web form titled "Create New Emergency Call". At the top right are "Save" and "Cancel" buttons. The form contains the following fields and options:

- Name:** Text input field containing "911".
- Emergency Number:** Text input field containing "911".
- Emergency Level:** Dropdown menu showing "3 - Significantly Urgent".
- Disable Hunt on Busy:** A checkbox that is currently unchecked.
- Custom Prompt:** Dropdown menu showing "Emergency.gsm" with a "Prompt" label next to it.
- Use Trunks:** A container showing two selected trunks: "AnalogTrunks -- Line1" and "AnalogTrunks -- Line2".
- Members Notified:** Two side-by-side lists. The left list is titled "27 items Available" and shows a search bar and a scrollable list of numbers: 2004, 2005, 2006, and 2007. The right list is titled "3 items Selected" and shows a search bar and a scrollable list of agents: 2001 "agent1", 2002 "agent2", and 2003 "agent3".

Figure 5: Emergency Number Configuration

Users could follow same model to add the rest of numbers and assign each one the required level.

The table below gives more description of the configuration parameters when creating emergency numbers.

Table 1: Emergency Numbers Parameters

Name	Configure the name of the emergency call. For example, "emergency911", "emergency211" and etc.
Emergency Number	Config the emergency service number. For example, "911", "211" and etc.



Emergency Level	Select the emergency level of the number. Level "3" means the most urgent.
Disable Hunt on Busy	If this option is not enabled, when the lines of trunks which the coming emergency call routes by are completely occupied, the line-grabbing function will automatically cut off a line from all busy lines so that the coming emergency call can seize it for dialing out. Note: This option is not enabled by default.
Custom Prompt	This option sets a custom prompt to be used as an announcement to the person receiving an emergency call. The file can be uploaded from the page "Custom Prompt". Click "Prompt" to add additional record.
Use Trunks	Select the trunks for the emergency call. Select one trunk at least and select five trunks at most.
Members Notified	Select the members who will be notified when an emergency call occurs.

Below is a screenshot of the configured numbers following company's ABC requirements.

Emergency Calls

[+ Add](#)

Name ↕	Emergency Number ↕	Emergency Level ↕	Disable Hunt on Busy ↕	Options
911	911	3	No	 
811	811	2	No	 
711	711	1	No	 

Total: 3 < 1 > 10 / page Goto 1

Figure 6: 911 Emergency Sample



USE CASE SAMPLE

During working hours, both PSTN lines were occupied with normal calls and suddenly an urgency situation occurred and user with extension 2018 dialed 911.

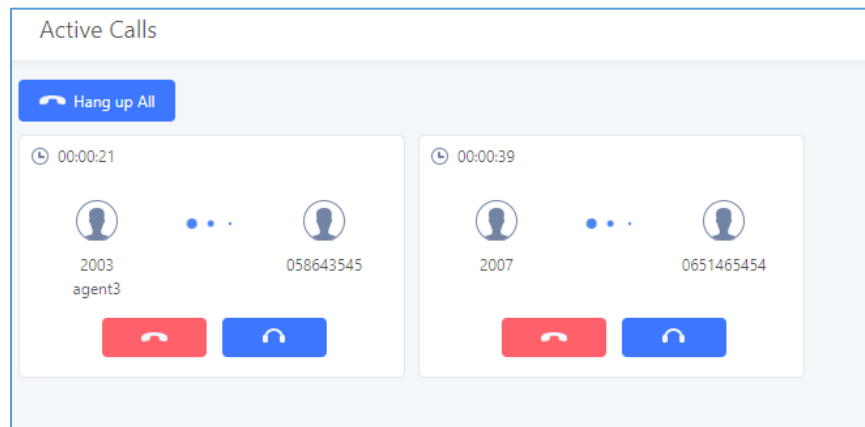


Figure 7: Active Calls

Once the user dialed the 911 emergency call, the UCM will drop one of the calls in order to give priority to the emergency call as well as sending notification to the other users as seen on the screenshot below

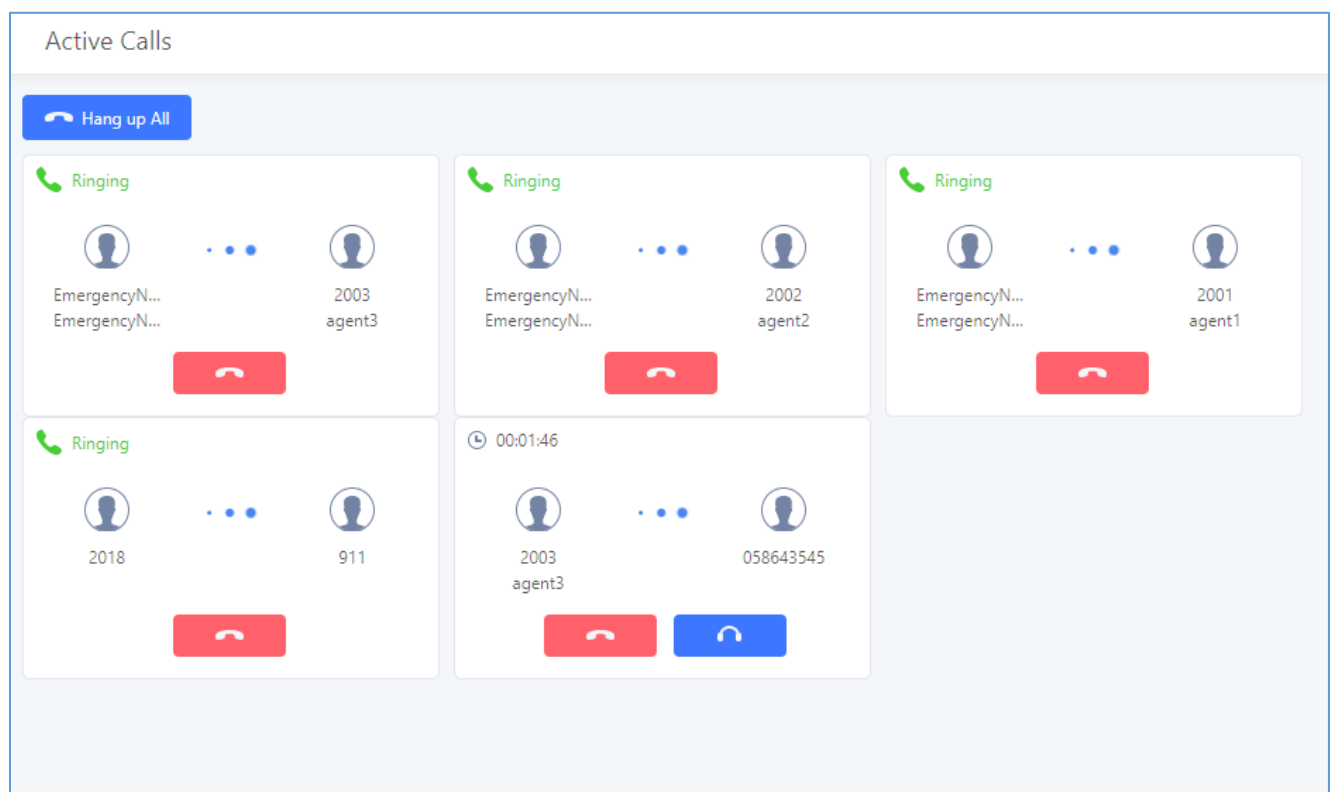


Figure 8: Active Calls 2



The call which was dropped is the one occupying line1 since it's the line with highest priority. This behavior is mainly because we had the option “**Disable Hunt on Busy**” deactivated, if activated, then the UCM will not hunt on busy lines to allow emergency calls to go through.

After the call has been initiated we can see also that UCM is sending notification calls to the selected users which could be personal for first aid at the company, and they will hear the custom prompt configured on 911 emergency number, if non-specified then the default prompt will be played.

The system admin, did receive on the fly the following Email notification.



Figure 9: Email Notification

Also, events notifications can be seen on the UCM’s web UI under « **Maintenance → System Events** ».

System Events

[Alert Log](#) Alert Events List Alert Contact

Alert Log Filter

[Delete Search Result \(s\)](#) [Delete All](#)

Time	Event Name	Type	Content
2018-04-06 00:39:37	Emergency Calls	Generate Alert	Dialing extension 2018 will call the emergency number (911).
2018-04-05 22:22:04	Emergency Calls	Generate Alert	Dialing extension 2018 will call the emergency number (911).
2018-04-05 22:11:19	Emergency Calls	Generate Alert	Dialing extension 2018 will call the emergency number (911).

Total: 3 1 / page Goto 1

Figure 10: System Events (Emergency Calls)