Grandstream Networks, Inc.

GXP21xx/17xx/16xx

Event List BLF Configuration Guide

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INTRODUCTION

Although SIP protocol (RFC3261) was not providing the semantics to support the Busy Lamp Field (BLF) but there's a way around to make the Busy Lamp Field function works on our phone by using the proper instantiation and the appropriate extension of the SIP Specific Event Notification framework (RFC3265). RFC4235 - Dialog Event Package is the instantiation RFC3265 which defined the mechanism of how the endpoint can subscribes for the status of any dialog including another endpoint. Busy Lamp Field feature is useful but can create a lot of overhead when trying to subscribe for the status of a large number of the resources. Event List BLF or BLF resource list is the solution to solve the overhead problem by reducing the number of requests. Instead of generating an individual SUBSCRIBE request for each resource status, the concept of the Event List is combining all of those requests into a single request that query the resources status from the Event List. RFC4662 – Resource List defines an aggregating mechanism that allows for subscribing and notifying for a list of resources. This mechanism is useful when the device needs to subscribe to a large number of resources. The overhead of generating individual SUBSCRIBE requests and the overhead of processing individual NOTIFY requests can be reduce by aggregating resources using a resource list concept.

This document serves as an end user guide on how to configure Grandstream GXP21xx/17xx/16xx Enterprise IP phones for UCM Eventlist BLF feature. And How to configure BLF list on Grandstream UCM and apply them on the GXP phones.

OVERVIEW

Grandstream GXP21xx/17xx/16xx Enterprise IP Phones support both Grandstream UCM Busy Lamp Field and EventList BLF features and allows end users, such as attendant, to monitor the call status of users in the list. GXP21xx/17xx/16xx supports this feature by sending out the subscription request to the UCM and changing the indicator status of the Line keys, MPKs, or virtual MPKs that associated with the monitored users. Additionally, the phone is also able to pick up the calls to the monitored extensions by using a pre-defined feature code called BLF- Call-pickup Prefix.

Available Programmable Keys on each Model

Model/Key	Line Keys	On board MPKs	Extension Board MPKs	VPKs
GXP2130	X	X		X
GXP2140	X		X	X
GXP2160	X	X		X
GXP2170	X		X	X
GXP1760	X			X
GXP1780	X			X
GXP1782	X			X
GXP1610	X			X
GXP1615	X			X
GXP1620	X			X
GXP1625	X			X
GXP1628	X	X		X
GXP1630	X	X		X

Table 1 : Available programmable keys on each model

HOW EVENT LIST BLF WORKS

Subscribe

According to the RFC4662 – Resource List, UCM must allow no more than 20 endpoints to subscribe on the single resource list. However, in practical, only a single endpoint will subscribe on a particular EventList. In the first step, the endpoint will send a SUBSCRIBE request to the configured EventList URI as per RFC3265. The main goal of this subscription is to obtain the state information of all endpoints that are associated with the Event List.

In order to subscribe for the Event List, it is necessary that phone includes the "eventlist" tag in the supported header and in most cases, Authorization header also required.

Via: SIP/2.0/UDP 192.168.40.119:5060;branch=z9hG4bK341324999;rport
From: <sip:5000@192.168.40.170>;tag=1620181217
To: <sip:170BLF@192.168.40.170>
Call-ID: 1469406960-5060-2@BJC.BGI.EA.BBJ
CSeq: 20001 SUBSCRIBE
Contact: <sip:5000@192.168.40.119:5060>
Authorization: Digest   username="5000",   realm="Grandstream",   nonce="509e9f25",
uri="sip:170BLF@192.168.40.170", response="47c40eb60804fff79e3478e327145432", algorithm=MD5
X-Grandstream-PBX: true
Max-Forwards: 70
User-Agent: Grandstream GXP2170 1.0.11.35
Expires: 3600
Supported: replaces, path, timer, **eventlist**
Event: dialog
Accept: application/dialog-info+xml,multipart/related,application/rlmi+xml
Allow: INVITE, ACK, OPTIONS, CANCEL, BYE, SUBSCRIBE, NOTIFY, INFO, REFER, UPDATE, MESSAGE
Content-Length: 0

Notify

Upon the successful subscription, the UCM will reply the Event List initial status information in form of the NOTIFY message that contains the state and other information of each endpoint on the Event List in the XML format. In normal cases, each NOTIFY will contains the information of 3 endpoints. Therefore, it is normal to have a set of NOTIFYs from the UCM even if the user only subscribes for a single Event List.

```
Content-Transfer-Encoding: binary
Content-ID: <5000@192.168.40.170>
Content-Type: application/dialog-info+xml;charset="UTF-8"

<?xml version="1.0" encoding="UTF-8"?>
<dialog-info xmlns="urn:ietf:params:xml:ns:dialog-info" version="2" state="full"
entity="sip:5000@192.168.40.170">
<dialog id="5000">
    <state>terminated</state>
    <local>
      <identity display="John Smith">sip:5000@192.168.40.170</identity>
    </local>
  </dialog>
</dialog-info>

Content-Transfer-Encoding: binary
Content-ID: <5001@192.168.40.170>
Content-Type: application/dialog-info+xml;charset="UTF-8"

<?xml version="1.0" encoding="UTF-8"?>
<dialog-info xmlns="urn:ietf:params:xml:ns:dialog-info" version="2" state="full"
entity="sip:5001@192.168.40.170">
  <dialog id="5001">
    <state>offline</state>
    <local>
      <identity display="David Jackson">sip:5001@192.168.40.170</identity>
    </local>
  </dialog>
</dialog-info>

Content-Transfer-Encoding: binary
Content-ID: <5002@192.168.40.170>
Content-Type: application/dialog-info+xml;charset="UTF-8"

<?xml version="1.0" encoding="UTF-8"?>
<dialog-info xmlns="urn:ietf:params:xml:ns:dialog-info" version="3" state="full"
entity="sip:5002@192.168.40.170">
  <dialog id="5002">
    <state>terminated</state>
    <local>
      <identity display="William Thompson">sip:5002@192.168.40.170</identity>
    </local>
```

```
    </dialog>
</dialog-info>
```

Endpoint States

➢ **Terminated**

When there is no active call for a specific endpoint or when a call to or from a subscribed endpoint is just being released, then the endpoint is considered idle/terminated.

- If applicable, the LED for the associated endpoint should be solid green or background should be solid green for the related VMPKs.

➢ **Early**

When an incoming call arrives for a subscribed endpoint, the endpoint is considered ringing/in the early state.

- If applicable, the LED for the associated endpoint should be blinking red or background should be solid red for the related VMPK.

➢ **Confirmed**

When a call is originated from a subscribed endpoint or a subscribed endpoint answered the call, then the resource is said to be in the "active" state.

- If applicable, the LED for the associated endpoint should be solid red or background should be solid red for the related VMPK.

➢ **Offline**

The subscription for that endpoint is failed or unreachable.

- If applicable, the LED for the associated endpoint should be off or background should be solid grey for the related VPK.

CREATING A BLF EVENT LIST ON GRANDSTREAM UCM

Grandstream UCM supports and allows creating an Event List for Busy Lamp Field (BLF) monitoring purpose. To create a list, login into the UCM and follow the below steps:

1. Go to **Call Features → Event List.**

2. Click "**Add Event List**" to start creating a new list.
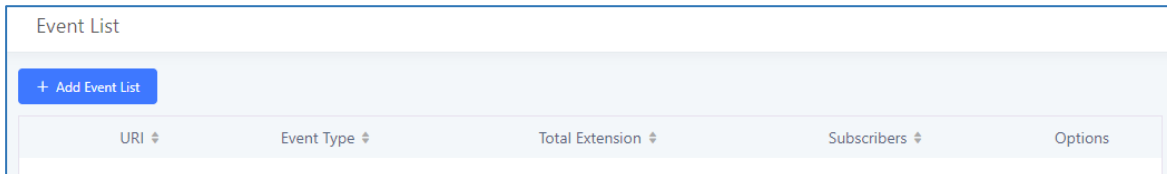
Figure 1 : Create new Event List

Enter the unique URI of the Event List in the URI field followed by choosing either "dialog" or "presence" eventlist (subscribers must carry the same value in Event header).
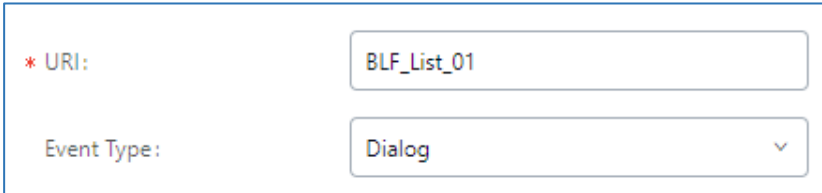
Figure 2 : Event List URI

3. Select the accounts (endpoint) to be monitored from the both available local and remote extensions.

   then click on the right arrow head to move them to the "selected" column.

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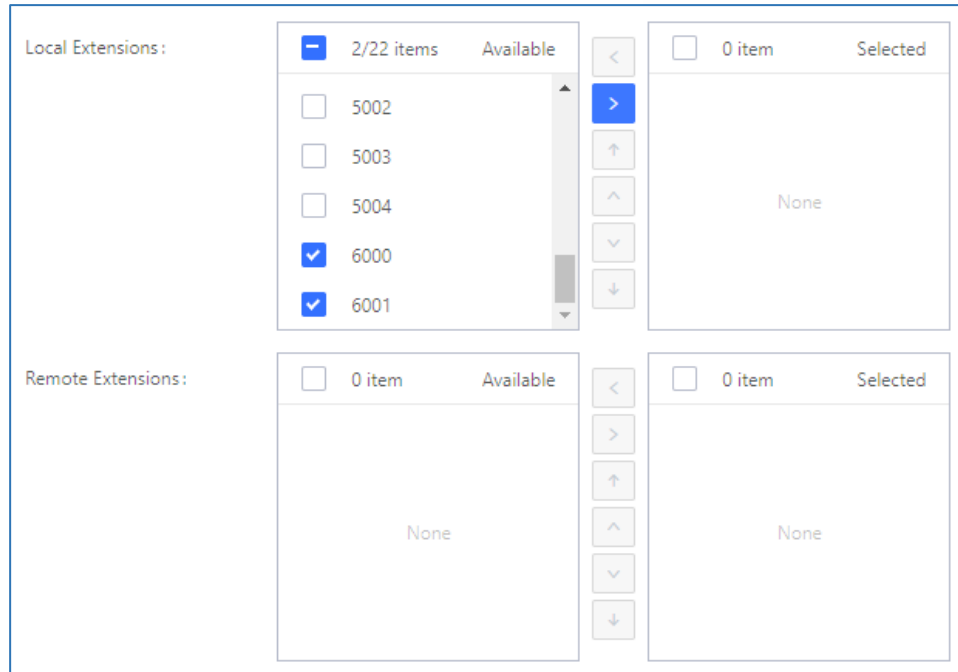
Figure 3 : Event List Account selection

4. You can add extensions which are not in the list under the "Special Extensions" field.

Figure 4 : Special Extensions

5. Click "**Save**" to complete the Event List BLF creation.

   If the new Event List is successfully created, it should be showing on the Event List table:

Figure 5 : Event List Table

6. Apply Changes

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Notes:

- Click on to edit the Event List configuration.

- Click on to delete the Event List.

- Once properly configuring the Event List on a GXP a new section will appear, labeled "Member of Subscribers". Where users can Select one Event List to show its subscribers.
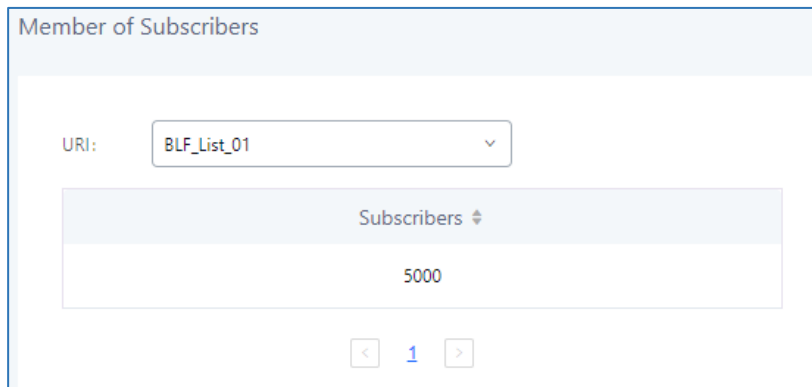
Figure 6 : Member of Subscribers

PROVISION THE EVENT LIST BLF ON THE PHONE

Configuring the GXP21xx/GXP17xx/GXP16xx Enterprise IP Phones to work with Grandstream UCM Event

List BLF feature is straightforward.

1. First configure your SIP account settings.

General Settings

Account Active	○ No ◉ Yes
Account Name	5000
SIP Server	192.168.5.215
Secondary SIP Server	
Outbound Proxy	
Backup Outbound Proxy	
BLF Server	
SIP User ID	5000
Authenticate ID	5000
Authenticate Password	
Name	
Voice Mail Access Number	
Picture	Select
Account Display	◉ User Name ○ User ID

Save   Save and Apply   Reset

Figure 7 : Configure the SIP Account Settings

2. Choose the provisioning method under Settings → Call Features: "Auto Provision List Starting Point".

Auto Provision List Starting Point   ● Extension Boards ○ VPK
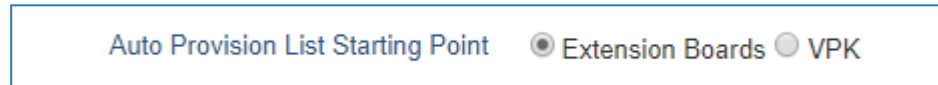
Figure 8 : Event List BLF provisioning method GXP21xx

- Select "**Extension Boards**" or "**VPK**" to be used first when the phone is being automatically provisioned with Event List BLF. The default setting is "Extension Boards".

Note:

- GXP2130/GXP2160: Need to set "**Auto Provision List Starting Point**" to "**MPK**" (Default setting is **VPK**) to make the provision work.

Auto Provision List Starting Point   ○ VPK ● MPK

Figure 9 : Event List BLF provisioning method on GXP2160/2130

3. Fill in the **BLF URI** under **Account X** → **SIP Settings** → **Advanced Features**.

- Enter the **URI** (name) of the Event List BLF that you just created on the Grandstream UCM.

- Enable **Auto Provision Eventlist BLFs** (Recommended) to automatically assign the BLF extensions into the available MPKs/VMPKs slots.

Figure 10 : Eventlist BLF URI Settings

4. In the case that Auto Provision Event List BLF was **disabled**:

a. Users can manually configure the **MPKs** on the extension Boards (GXP2140/2170) to monitor the BLF extension. Under **Settings → Extension Boards → EXTx**: For each MPK, user needs to select "Eventlist BLF" as **Mode**, choose the specified **Account**, and enter the **Value** of each extension in the list. After saving and rebooting, the UCM extensions will be logged on the extension board, and the phone will start to monitor the extensions status.

Figure 11 : Extension Board Settings

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b. If the phone doesn't support the extension board. Event List BLF still can be configured on **Line Keys**: Go to **Settings → Programmable Keys → Programmable Keys,** then configure each line accordingly.

Figure 12 : Configure Eventlist BLF on Line Keys

The Eventlist BLF can also be configured on **MPKs** and **VPKs**:

c. To configure the Eventlist BLF on **MPKs**: Go to **Settings → Programmable Keys → Multi-Purpose Keys**.

Figure 13 : Configure Eventlist BLF on MPKs

d. To configure the Eventlist BLF on **VPKs**:

Go to **Settings → Programmable Keys → Virtual Multi-Purpose Keys**: Click "**Add VPK**" to Select the "**Mode**", the "**Account**" and enter the "**Value**". Then "**Save**".

Figure 14 : Edit VPK

Figure 15 : Configure Eventlist on VPKs

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VISUAL INDICATORS

Grandstream GXP21xx/17xx/16xx Enterprise IP Phones are able to notify the end user of the call status of the monitored extension by turning on the LEDs or changing the background colors.

For example, if the monitored extension is ringing, the BLF indicator status will be changed from solid green to blinking red; and if the monitored extension answers the call, the BLF indicator status will be changed from blinking red to solid red.

The following table shows the BLF indicator status in different scenarios:

Monitored Extension Behavior	VMPK (BLF Background Status for GXP21xx)	LINE Keys/MPKs (LED Indicator Status)	Extension Board Key Status (Only for MPK Extension Supported Models)
Idle	Solid green	Solid green	Solid green
Placing a call	Solid red	Blinking green	Blinking green
Ringing	Solid red	Blinking red	Blinking red
During a call	Solid red	Solid red	Solid red
Hold the call	Solid red	Solid red	Solid red
Call Park	Solid red	Blinking red	Blinking red
Monitored extension not registered/BLF subscription failed	Solid grey	Off	Off

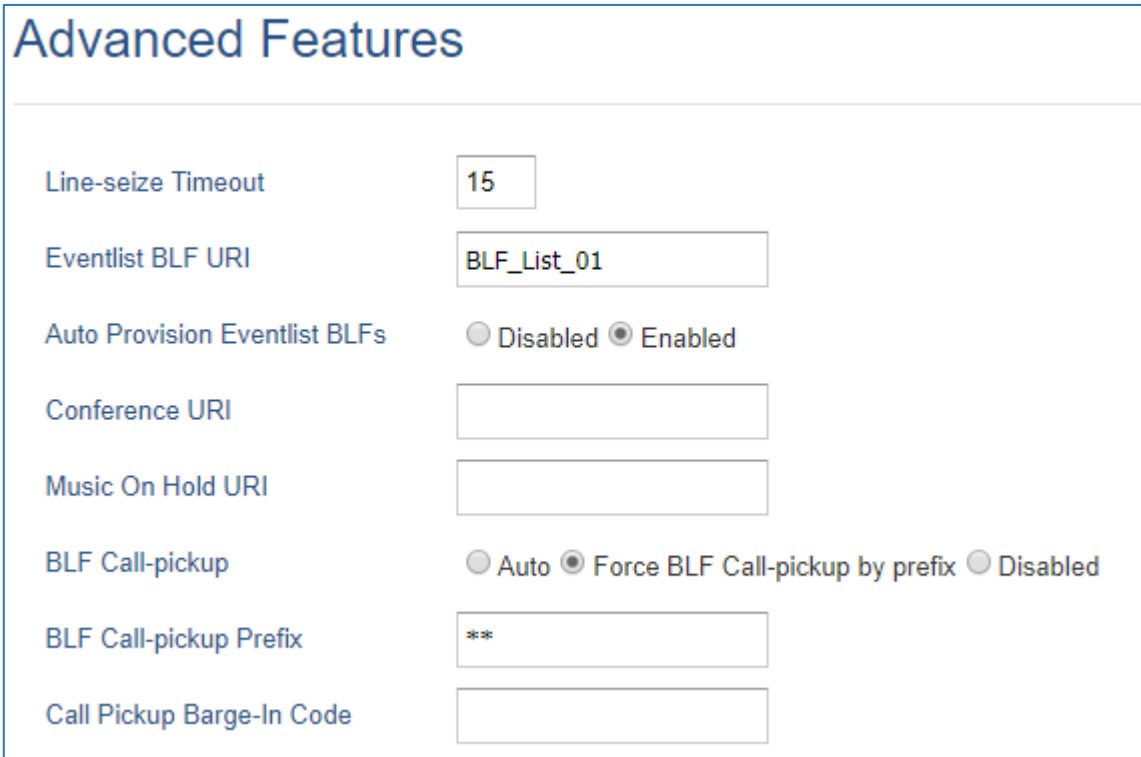**Table 2 : The BLF Indicators Status in Different Scenarios**

DIRECTED CALL PICKUP

Directed call pickup feature allows the GXP/21xx/17xx/16xx phone system to answer the calls to the monitored users. This feature is very useful for the attendant to be able to answer calls if the callees are not available.

For the Grandstream UCM system, it requires to dial the specified prefix ahead of the monitored extension to direct pick up the call. Thus, the end user must configure the **BLF Call-pickup Prefix** for GXP21xx/17xx/16xx in order to use this feature.

The following screenshot shows that (**) is configured as the prefix under the **Account X → SIP Settings → Advanced Features → BLF Call-pickup Prefix.**

Figure 16 : Configure BLF Call Pickup Prefix for GXP21xx

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Figure 17 : Configure BLF Call Pickup Prefix for GXP17xx/GXP16xx

Then, when the monitored user's indicator shows an incoming call signal, the GXP21xx/17xx/16xx phones

user can press the BLF button to answer/pick up the call.