



Grandstream Networks, Inc.

GXP2130/2140/2160/2170

Event List BLF Configuration Guide

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Introduction

Although **SIP protocol (RFC3261)** was not provide 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 request. 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 GXP2130/2140 /2160/2170 Enterprise IP phones for UCM Even List BLF feature. How to configure BLF list on Grandstream UCM and apply them on the GXP2130/2140/2160/2170 phone.

Overview

Grandstream GXP2130/2140/2160/2170 Enterprise IP Phones support both Grandstream UCM Busy Lamp Filed and Event List BLF features and allows end users, such as attendant, to monitor the call status of users in the list. GXP2130/2140/2160/2170 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	VMPKs
GXP2130	X	X		
GXP2140	X		X	
GXP2160	X	X		
GXP2170			X	X

Table 1: Available programmable keys on each model

How Event List BLF works

SUBSCRIBE

According the **RFC4662 – Resource List**, UCM must allow no more than 20 endpoint to subscribe on the single resource list. However, in practical, only a single endpoint will subscribe on a particular Event List. In the first step, endpoint will send a SUBSCRIBE request to the configured Event List URI as per **RFC3265**. The main goal of this subscription is for obtaining the state information of all endpoints that associated with the Event List. In order to subscribe for the Event List, it necessary that endpoint phone must include the “**evenlist**” tag in the supported header and in most of the case, 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 1.0.6.4
Expires: 3600
Supported: replaces, path, timer, eventlist
Event: dialog
Accept: application/dialog-info+xml,multipart/related,application/rimi+xml
Allow: INVITE, ACK, OPTIONS, CANCEL, BYE, SUBSCRIBE, NOTIFY, INFO, REFER, UPDATE, MESSAGE
Content-Length: 0
```

NOTIFY

Upon the successful subscription, UCM will reply back 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 case, each NOTIFY will contains the information of 3 endpoints. Therefore, it is normal to have a set of NOTIFYs from UCM even 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 a solid green on VMPKs.

Early

When 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 turned solid red for VMPK.

Confirmed

When a call is originated from a subscribed endpoint or 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 turned solid red.

Offline

The subscription for that particular endpoint is failed or unreachable.

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

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 UCM and find the **Event List** option under **PBX -> Call Features -> Event List**.

Click **“Create New Event List”** to start creating a new list. Enter the unique URI of the Event List in the URI field follow by selecting the accounts (endpoint) to be monitored from the both available local and remote extensions. After finish selecting the accounts, click **“Save”** to complete the Event List BLF creation.

Create New Event List

URI: BLF_LIST_SAMPLE

Local Extensions:

Available Extensions/Extension Groups		Selected Extensions/Extension Groups
5001 "David Jackson"	➤	5000 "John Smith"
5003 "Eric Green"	➤	5002 "William Thompson"
5005 "Martin Cook"	➤	5004 "Jose Hernandez"
	⌫	

Remote Extensions:

Available Extensions		Selected Extensions
ting--1 "ting1"	➤	
ting--2 "ting2"	➤	
ting--3 "ting3"	➤	
ting--4 "avaya03"	➤	
	⌫	

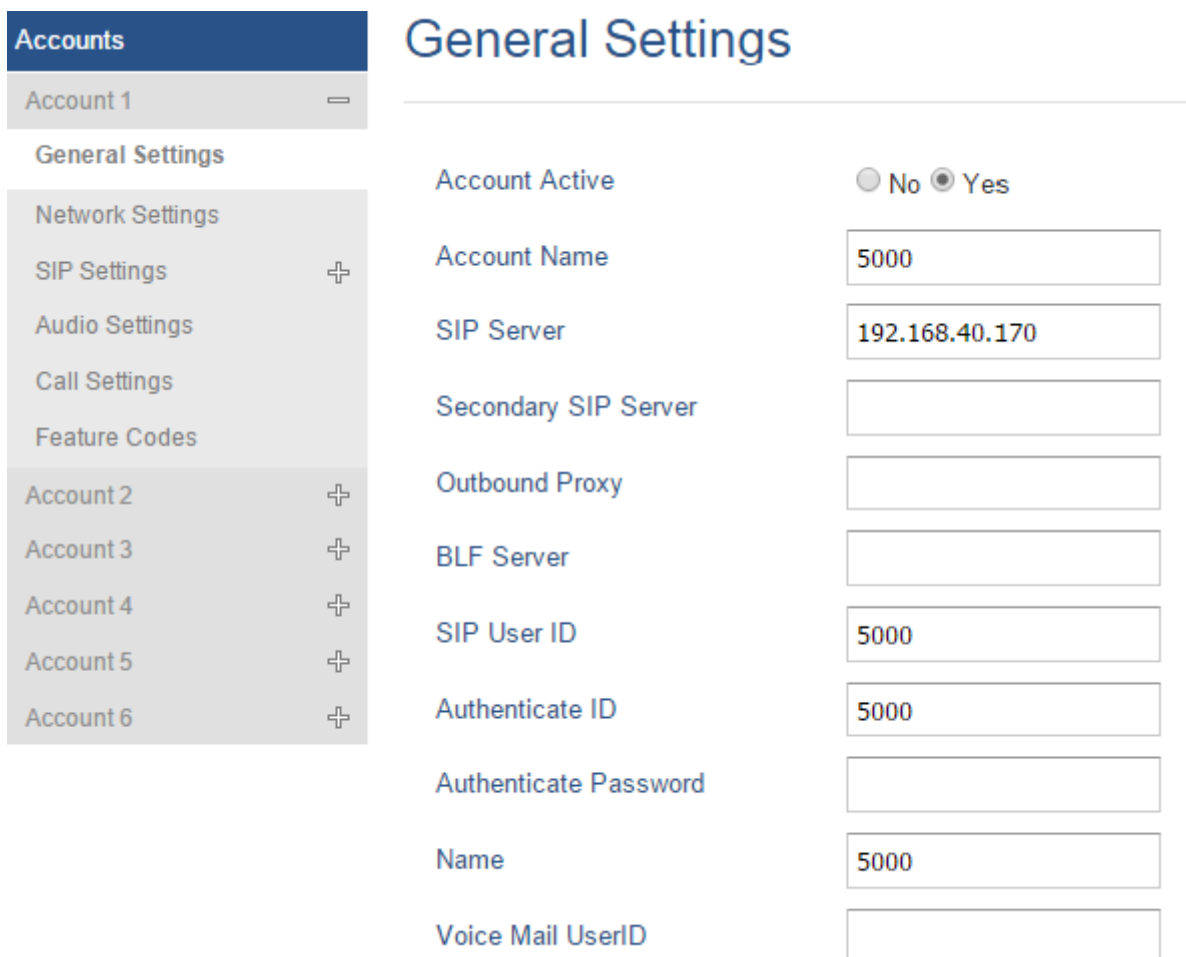
Special Extensions:

Figure 1 Creating BLF list

Provision the Event List BLF on the phone

Configuring the GXP2130/2140/2160/2170 Enterprise IP Phones to work with Grandstream UCM Event List BLF feature is straightforward. First configure the SIP account settings just as you would for a normal SIP account. Then after the SIP account is registered with UCM server, fill in the **BLF URI** under **Account X -> SIP Settings -> Advance Features**. Select **Auto Provision Eventlist BLFs** (recommended) to automatically assign the BLF extensions into the available MPKs/VMPKs slots or disable the **Auto Provision Eventlist BLFs** to manually assign the BLF extensions on the specific MPKs/VMPKs slots.

1. Configure the **SIP Account Settings**:



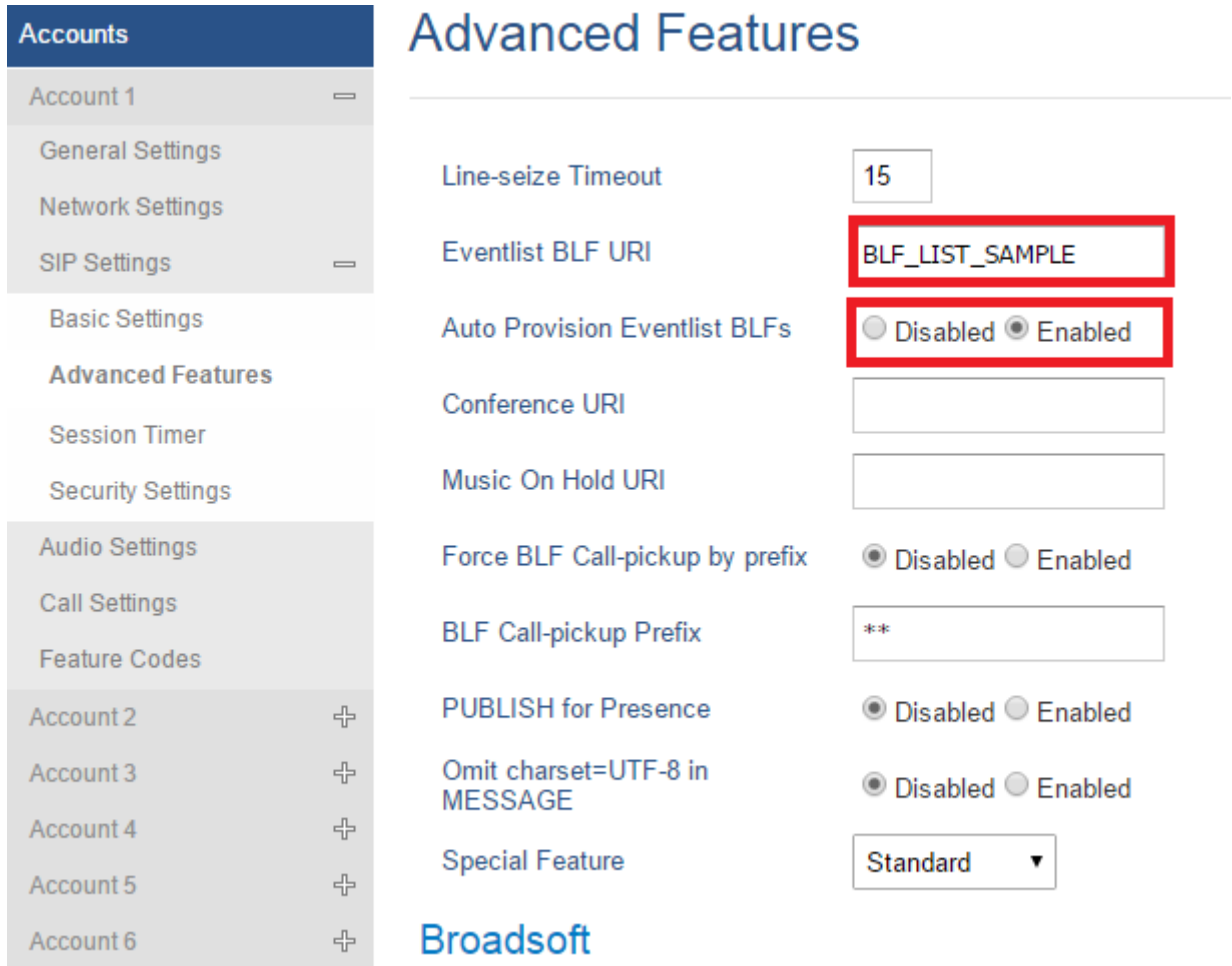
Accounts	
Account 1	[-]
General Settings	
Network Settings	
SIP Settings	[+]
Audio Settings	
Call Settings	
Feature Codes	
Account 2	[+]
Account 3	[+]
Account 4	[+]
Account 5	[+]
Account 6	[+]

General Settings

Account Active	<input type="radio"/> No <input checked="" type="radio"/> Yes
Account Name	5000
SIP Server	192.168.40.170
Secondary SIP Server	
Outbound Proxy	
BLF Server	
SIP User ID	5000
Authenticate ID	5000
Authenticate Password	
Name	5000
Voice Mail UserID	

Figure 2: Configure the SIP Account Settings

2. Under **Account X -> Sip Settings -> Advance Features -> Eventlist BLF URI**, enter the URI (name) of the Eventlist BLF that we just created on the Grandstream UCM. (see figure 3)
3. Under **Account X -> Sip Settings -> Advance Features -> Auto Provision Eventlist BLF**, select **Enabled** to automatically assign the BLF extensions on the available MPKs/VMPKs or select **Disabled** for manually assign the BLF extensions. (see figure 3)



Accounts

Account 1 -

General Settings

Network Settings

SIP Settings -

Basic Settings

Advanced Features

Session Timer

Security Settings

Audio Settings

Call Settings

Feature Codes

Account 2 +

Account 3 +

Account 4 +

Account 5 +

Account 6 +

Advanced Features

Line-seize Timeout

Eventlist BLF URI

Auto Provision Eventlist BLFs Disabled Enabled

Conference URI

Music On Hold URI

Force BLF Call-pickup by prefix Disabled Enabled

BLF Call-pickup Prefix

PUBLISH for Presence Disabled Enabled

Omit charset=UTF-8 in MESSAGE Disabled Enabled

Special Feature

Broadsoft

Figure 3: Eventlist BLF URI Settings

- 3.1.1 In the case that Auto Provision Event List BLF was **disabled**. Users can manually configure the **MPKs** on the extension Boards (GXP2140/2170) to monitor the BLF extension. Under **Settings -> Extension Boards**. For each MPK, user needs to select “Eventlist BLF” in the **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. As the figure shows below:

EXT 1

	Mode	Account	Description	Value
EXT 1	Eventlist BLF ▼	Account 1 ▼	Description	5000
EXT 2	Eventlist BLF ▼	Account 1 ▼	Description	5002
EXT 3	Eventlist BLF ▼	Account 1 ▼	Description	5004
EXT 4	None ▼	Account 1 ▼	Description	Value
EXT 5	None ▼	Account 1 ▼	Description	Value
EXT 6	None ▼	Account 1 ▼	Description	Value
EXT 7	None ▼	Account 1 ▼	Description	Value
EXT 8	None ▼	Account 1 ▼	Description	Value

Figure 4: Extension board Settings

3.1.2 In the case that Auto Provision Event List BLF was **disabled** and your phone not supports the extension board. Event List BLF still can be configured on the **Line Keys**, **MPKs**, and **Virtual MPKs (VMPKs)**.

- To configure the Event List BLF on **Line Keys**, go to **Settings -> Programmable Keys -> Line Keys**. Follow the mode and value setup from 3.1.1.

Programmable Keys

Line Keys

	Mode	Account	Description	Value
LINE 1	LINE ▼	Account 1 ▼	Description	Value
LINE 2	Eventlist BLF ▼	Account 1 ▼	Description	5000
LINE 3	Eventlist BLF ▼	Account 3 ▼	Description	5002
LINE 4	Eventlist BLF ▼	Account 4 ▼	Description	5004

Figure 5 Configure Eventlist BLF on Line Keys

- To configure the Eventlist BLF on **MPKs**, go to **Settings -> Programmable Keys -> Multi-Purpose Keys**. Follow the mode and value setup from 3.1.1.

Multi-Purpose Keys

	Mode	Account	Description	Value
MPK 1	Eventlist BLF ▼	Account 1 ▼	Description	5000
MPK 2	Eventlist BLF ▼	Account 1 ▼	Description	5002
MPK 3	Eventlist BLF ▼	Account 1 ▼	Description	5004
MPK 4	Speed Dial ▼	Account 1 ▼	Description	Value
MPK 5	Speed Dial ▼	Account 1 ▼	Description	Value
MPK 6	Speed Dial ▼	Account 1 ▼	Description	Value
MPK 7	Speed Dial ▼	Account 1 ▼	Description	Value
MPK 8	Speed Dial ▼	Account 1 ▼	Description	Value
MPK 9	Speed Dial ▼	Account 1 ▼	Description	Value

Figure 6 Configure Eventlist on MPKs

- To configure the Eventlist BLF on **VMPKs**, go to **Settings -> Programmable Keys -> Virtual Multi-Purpose Keys**. Follow the mode and value setup from 3.1.1.

Edit VPK ⌵ ✕

Mode

Accounts

Description

Value

Figure 7 Configure Event List BLF on VMPKs

Visual Indicators

Grandstream GXP2130/2140/2160/2170 Enterprise IP Phones is able to notify the end user of the call status of the monitored extension by changing the LED or 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)	LINE Keys/MPKs (LED Indicator Status)	Extension Board Key Status
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 GXP2130/2140/2160/2170 phone system to be able to answer the calls to the monitored users. This feature is very useful for the attendant to help the specified callees to answer the call if the callees are not available to answer it.

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 has to configure the **BLF Call-pickup Prefix** for GXP2130/2140/2160/2170 in order to use this feature.

The following screenshot shows the *12 is configured as the prefix under the **Account X -> SIP Settings -> Advanced Features -> BLF Call-pickup Prefix**.

Advanced Features

Line-seize Timeout	<input type="text" value="15"/>
Eventlist BLF URI	<input type="text" value="BLF_LIST_SAMPLE"/>
Auto Provision Eventlist BLFs	<input type="radio"/> Disabled <input checked="" type="radio"/> Enabled
Conference URI	<input type="text"/>
Music On Hold URI	<input type="text"/>
Force BLF Call-pickup by prefix	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
BLF Call-pickup Prefix	<input type="text" value="*12"/>
PUBLISH for Presence	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled
Omit charset=UTF-8 in MESSAGE	<input checked="" type="radio"/> Disabled <input type="radio"/> Enabled

Figure 8: Configure BLF Call Pickup Prefix

Then, when the monitored user's indicator shows an incoming call signal, the GXP2130/2140/ 2160/2170 phones user can press the BLF button to answer the call for the monitored user.