Grandstream Networks, Inc.

VPK (Virtual Multi-Purpose Keys) Guide

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SUPPORTED DEVICES

Following table shows Grandstream products supporting VPK feature:

Model	Supported	Firmware
GXP21XX Series		
GXP2130	Yes	1.0.7.25 or higher
GXP2140	Yes	1.0.7.25 or higher
GXP2160	Yes	1.0.7.25 or higher
GXP2135	Yes	1.0.7.25 or higher
GXP2170	Yes	1.0.7.25 or higher

INTRODUCTION

Grandstream GXP21XX IP phones have introduced a new VPK ("Virtual Multi-Purpose Keys") feature to add more flexibility and provide better user experience using Multi-Purpose Keys modes.

With the new VPK feature design, line keys can be assigned with multiple functions. Users have also the ability to add more VPKs which will be displayed on different screens. The screens are dynamically added to match the extra VPKs, and incrementally indexed on the top of the main screen (1 to 4) until reaching the maximum number of supported VPKs.

Using VPK, users will be able to monitor extensions, use speed dial numbers, send DTMF during calls and more from their phone screens directly; switching between screens will show configured VPK and bring more flexibility to user's experience.

If using standard MPK on a GXP2160 IP phone, for instance, which supports 6 line keys, customers can use 1 LINE key for the main SIP accounts and the 5 others (not including built-in MPKs) can be used for monitoring/speed dial or any other available features using that account. While using VPK feature on the same GXP2160, customers can configure the same LINE key with up to 4 features virtually mapped on different screens, as an example, Line 1 key can be configured as LINE on the first screen, BLF on screen 2, Speed Dial on screen 3 and Call Park on screen 4.

Below screenshot shows the 4 screen pages of the GXP2160.

Figure 1: VPK Pages

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FIXED AND DYNAMIC VPK

Fixed VPK

Fixed VPKs are the hard line keys on each phone model; their default mode is "Line" and support all other modes (BLF, Speed Dial…).

Each phone model has a specific number of hard line keys limiting the number of supported Fixed VPK. For instance, GXP2170 has 12 Line keys allowing to support 12 Fixed VPKs

Dynamic VPK

Dynamic VPK are virtual keys that can be added by users.

Each phone model has a specific number of allowed Dynamic VPK, depending on number of hard line keys and screens. For instance, GXP2170 has 12 hard keys, number of supported VPKs (Fixed and Dynamic) is 48 VPK = 12 (Fixed VPK) x 4 (screens), available Dynamic VPKs is 36 VPK = 48 VPK - 12 hard keys.

The screens are dynamically added to match the extra VPKs, and incrementally indexed on the top of the main screen (1 to 4) until reaching the maximum number of supported VPKs.

Note: Dynamic VPKs support all available modes (BLF, Speed Dial, Call Park, transfer…) except **LINE**, **Shared Line** and **NONE** modes.

Fixed/Dynamic VPK per Phone Model

The table below shows how many Fixed/Dynamic VPKs each GXP model support.

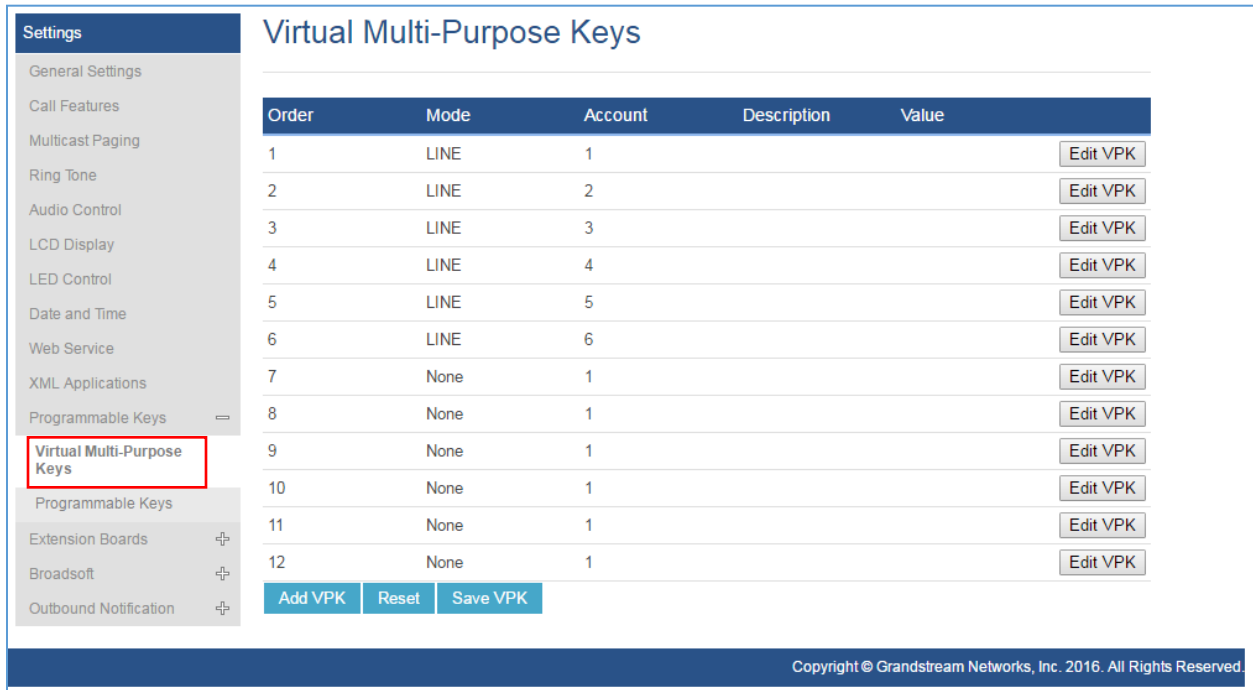|	GXP2130	GXP2140	GXP2160	GXP2135	GXP2170
Fixed VPK	3	4	6	8	12
Dynamic VPK	9	12	18	24	36
Total VPK	**12**	**16**	**24**	**32**	**48**

Table 1: Fixed/Dynamic VPK per Phone Model

Note: Even if a fixed VPK has mode set to "None", the number of allowed Dynamic VPKs will not change.

VPK CONFIGURATION

To configure/add/edit or delete VPK, follow below steps:

1. Access Web GUI of GXP phone.
2. Go to **Settings → Programmable Keys → Virtual Multi-Purpose Keys**.

Figure 2: Virtual Multi-Purpose Keys page

3. Configure Fixed or Dynamic VPKs as follow:
   a. **Fixed VPK:**
      - Press **Edit VPK** button
      - Select mode to use from **Mode** dropdown list.
      - Select **Account#** from **Accounts** dropdown list.
      - Enter a description text in **Description** field (optional).
      - Enter the value sequence for each mode in **Value** field if required.
      - Press **Save** button to save your configuration (**Reset** button allows to reset all fields to default values).
      - Press **Save VPK** to apply changes to VPK.

   Note: Fixed VPKs can only be edited. Adding or deleting Fixed VPK is not allowed.

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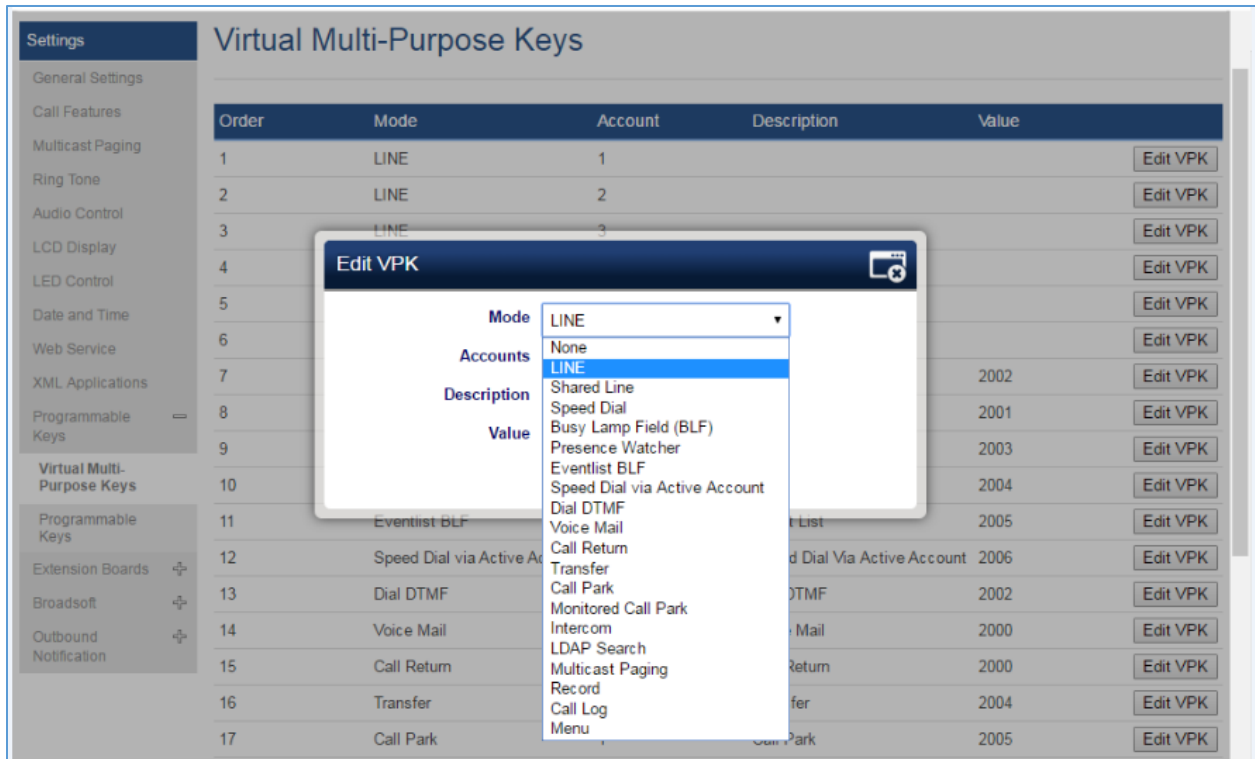
Figure 3: Fixed VPK – Edit

Example:

Customer's GXP2170 has a SIP account registered on Account 1 and needs to monitor extension 1000.

Below values needs to be used:

- **Mode**: Busy Lamp Field (BLF)
- **Accounts:** Account 1 (selected)
- **Description:** BLF_1000 (optional)
- **Value:** 1000

b. **Dynamic VPK**

- Press **Add VPK** to create a new Dynamic VPK.
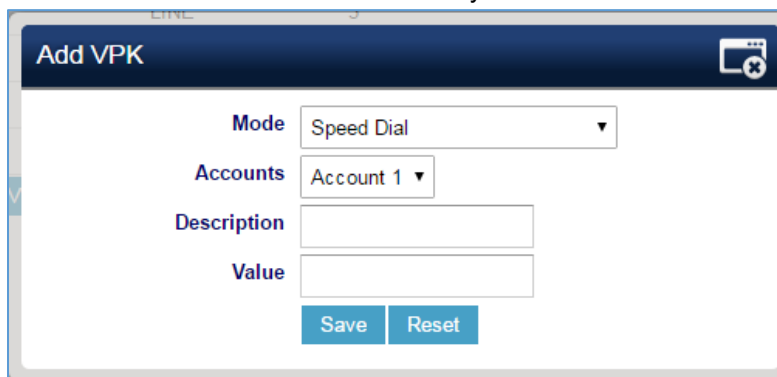
Figure 4: Add VPK

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- Select mode to use from **Mode** dropdown list.

- Select **Account#** from **Accounts** dropdown list.

- Enter a description text in **Description** field (optional).

- Enter the value sequence for each mode in **Value** field if required.

- Press **Save** button to save your configuration (**Reset** button allows to reset the VPK to default value).

- Press **Save VPK** to apply changes to VPK.

Note: Once added and saved, **Edit VPK** and **Delete VPK** buttons will appear. Customers can press **Edit VPK** button to edit or **Delete VPK** to remove selected VPK.
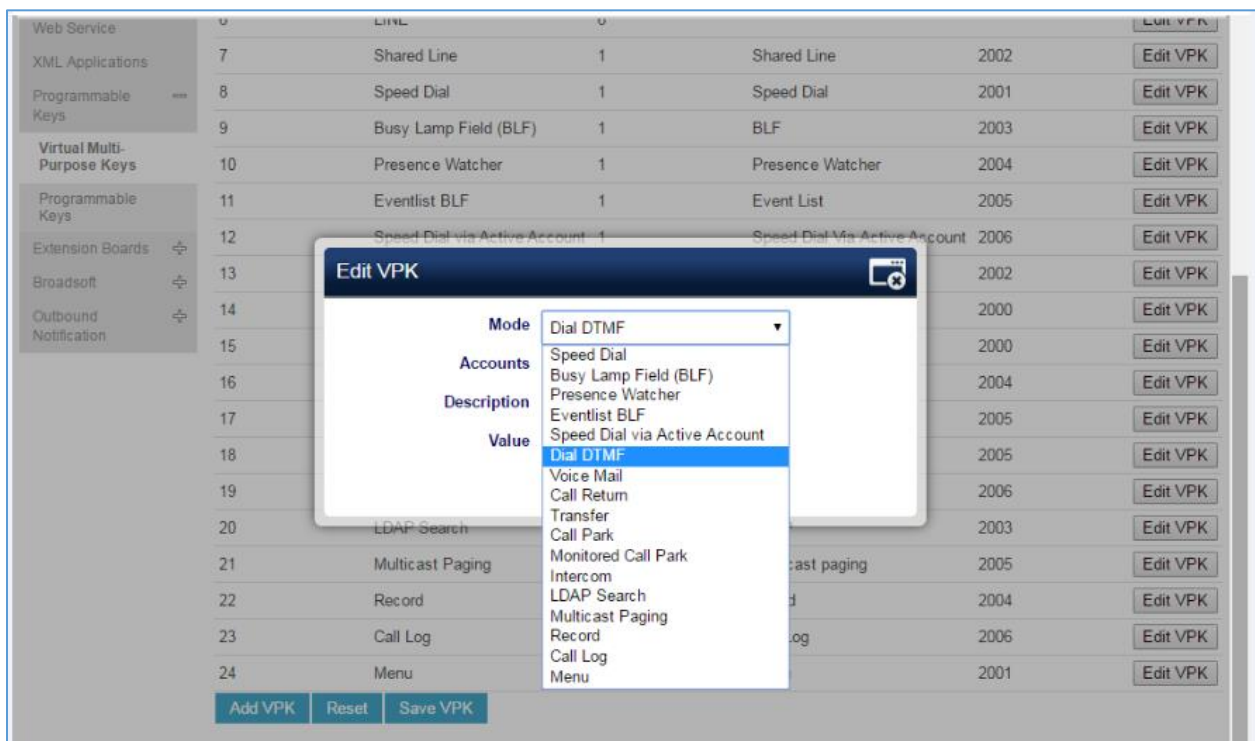
Figure 5: Dynamic VPK

Example:

Customer's GXP2170 has a SIP account registered on Account 1 and wants to add a Speed Dial for extension 1001.

Below values needs to be used:

- **Mode**: Speed Dial

- **Accounts:** Account 1 (selected)

- **Description:** SP_1001 (optional)

- **Value:** 1001

VPK MODES AND INDICATION

Fixed VPK support all available modes (20 modes), while Dynamic VPK doesn't support **Line, Shared Line** and **None** modes (17 modes). The following table provides a description of each mode as well as state, icon, and LED status.

Table 2: VPK Modes and Indications

VPK Mode	Description	State	Icon	LED Status
Speed Dial	Speed Dial mode allows to set a key for one touch dialing; configured number will be dialed once VPK is pressed. Select the **Account** to dial from and enter the Speed Dial number to be dialed in the **Value** field or enter the IP address to set the Direct IP call as Speed Dial.	Account Unregistered		OFF
		Account Registered		ON
Busy Lamp Field (BLF)	Busy Lamp Field (BLF) mode allows to monitor status (available, ringing, busy) of an extension. Select the **Account** to monitor the BLF status. Enter the extension number in the **Value** field to be monitored.	Offline, Unknown		OFF
		Terminated		GREEN
		Proceeding		RED
		Ringing (Early)		Flashing RED
		Trying		Flashing RED
		Confirmed		RED
Speed Dial Via Active Account	Speed Dial via active account mode allows to set a key for one touch dialing; configured number will be dialed once VPK is pressed using specified account if available, otherwise, first available account will be used to dial out. Select the **Account** to dial from and enter the Speed Dial number to be dialed in the **Value** field or enter the IP address to set the Direct IP call as Speed Dial.	No state changes		OFF
Dial DTMF	Dial DTMF allows customers to send digits while in communication, for instance, when dialing to an IVR, users can set Dial DTMF Key to send digits to the IVR. Enter a series of DTMF digits in the **Value** field to be dialed during the call.	No state changes		OFF
Voice Mail	Allows access to user's voice mail by pressing configured VPK. Select **Account** and enter the Voice Mail access number	Account not registered		OFF
		Account Registered (No new voice mail)		OFF

				OFF
	in the **Value** field.	Account Registered (voice mail available)		OFF
Call Return	Allows users to dial last answered call by pressing configured VPK. The **Value** field should be left blank. This option is not binding to the account and the call will be returned based on the account with the last answered call.	No state changes		OFF
Transfer	Allows to set a destination number to transfer calls to it (blind transfer) by pressing configured VPK. Select **Account**, and enter the number in the **Value** field to be transferred during the call.	Account Unregistered		OFF
		Account Registered		OFF
Call Park	This feature allows to park/pick up the call, and can be also used to monitor parking lots via VPK button's LED. Select **Account**, and enter the call park extension in the **Value** field to park/pick up the call. Notes: • If **Value** field has leading star code like ***xx**, the phone will not send SUBSCRIBE to the server, and VPK will be used to only park/retrieve calls; • If **Value** field is set with parking lots (for example: 701, 702…), VPK will be used as **Monitored Call Park;** the phone will send SUBSCRIBE to monitor configured parking lots and park/retrieve calls.	Account Unregistered		OFF
		Account Registered		OFF
Intercom	Allows to set a VPK as intercom button to a specific destination with auto-answer instruction. When the call is initiated, SIP INVITE sent towards destination extension (via SIP server) will include **Alert-info** header with **Auto-answer=0** parameter. Select **Account**, and enter the extension number in the **Value** field to do the intercom.	Account Unregistered		OFF
		Account Registered		OFF
LDAP Search	This option is to narrow the LDAP search scope. • Enter the LDAP search base in the **Description** field. It could be the same or different from the Base in LDAP configuration under Advanced Settings. The Base in LDAP configuration will be used if the Description field is left blank. • Enter the LDAP Name/Number filter in the **Value** field. For example: If users set VPK as "LDAP Search" for "Account 1", and set filters: **Description** ->	No State		OFF

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	ou=video,ou=SZ,dc=grandstream,dc=com **Value ->** sn=Li Since the Base for LDAP server configuration is "dc=grandstream,dc=com", "ou=video,ou=SZ" is added to narrow the LDAP search scope. "sn=Li" is the example to filter the last name.			
Multicast Paging	Multicast paging is a feature that allows the user to make calls to a group of phones listening to the same Paging IP address. Multicast paging calls will be automatically answered on listening phones and conversation will be in one-way audio path (originator can speak, while listening phones will be able to hear only). Enter Line key description in **Description** field and multicast sending address in **Value** field.	No State		OFF
Record	Allows users to record ongoing calls. Recording needs to be supported on the server to use this feature.	Idle		OFF
		Recording		Flashing
Call Log	This Key is a shortcut to Call History.	No state		OFF
Menu	This Key is a shortcut to the Menu button.	No state		OFF
Presence Watcher	Presence watcher allows to monitor presence / registration status of an extension. this feature needs to be supported by SIP server to use it. Select the **Account** to monitor the presence status. Enter the extension number in the **Value** field to be monitored.	Offline, Unknown		OFF
		Available		GREEN
Monitored Call Park	This feature allows to park/pick up the call, and monitor the parked call via VPK button's LED. Select account from **Account** field, and enter the call park extension in the **Value** field. **Note:** The phone sends SUBSCRIBE to the server to retrieve status of monitored parking lot.	Offline, Unknown		OFF
		Available		GREEN
		Call Parked		RED
Eventlist BLF	Eventlist BLF allows to monitor a list of extension similar to BLF, administrator needs to configure Eventlist BLF on server side and provide Eventlist BLF URI on the phone. Select the **Account** to monitor the Eventlist BLF status. Enter the extension number in the **Value** field to be monitored and make sure to specify "**Eventlist BLF URI**" (Account X → SIP Settings → Advanced Features).	Offline, Unknown		OFF
		Terminated		GREEN
		Proceeding		RED
		Ringing (Early)		Flashing RED
		Trying		Flashing RED
		Confirmed		RED

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Line	Regular line key to open up a line and switch line. The **Description** and **Value** fields can be left blank. **Note:** Line mode is supported on Fixed VPK only.	Unregistered (No IM, Voice mail, No Call Forward)		OFF
		Registered + Idle (No IM, Voice mail, No Call Forward)		OFF
		Unregistered + IM + Voice mail		OFF
		Registered + IM + Voice mail		OFF
		Unregistered + IM (No Voice mail)		OFF
		Registered + IM (No Voice mail)		OFF
		Unregistered + Voice Mail (No IM)		OFF
		Registered + Voice Mail (No IM)		OFF
		Unregistered + Call Forward All (No IM, No Voice Mail)		OFF
		Registered + Call Forward All (No IM, No Voice Mail)		OFF
		Unregistered + Call Forward Delay + Call Forward Busy (No IM, No Voice Mail)		OFF
		Registered + Call Forward Delay + Call Forward Busy (No IM, No Voice Mail)		OFF
		Unregistered + Call Forward Delay (No IM, No Voice Mail, No Call Forward Busy)		OFF
		Registered + Call Forward Delay (No IM, No Voice Mail, No Call Forward Busy)		OFF

		Unregistered + Call Forward Busy (No IM, No Voice Mail, No Call Forward Delay)		OFF
		Registered + Call Forward Busy (No IM, No Voice Mail, No Call Forward Delay)		OFF
		Registered + Ringing		Flashing RED
		Registered + On Hold		Flashing GREEN
		Registered + Connected + Incoming Call		GREEN
		Registered + Connected + Outgoing Call		GREEN
Shared Line	Share line for Shared Line Appearance feature. Select the Account registered as Shared line for the line key. The **Description** and **Value** fields can be left blank. **Note:** You may refer to this guide for more detail about Shared Line configuration: BS_SCA_conf_Guide	Unregistered		OFF
		Registered + Not support SCA Call-info header		OFF
		Registered + Not support SCA or SCA Failed		OFF
		Registered + Idle		OFF
		Registered + Seized		RED(Alternate DUT)
		Registered + Processing		Flashing GREEN(Alternate DUT)
		Registered + Alert		Flashing RED
		Registered + Hold by user		Flashing GREEN
		Registered + Hold by the other party		Flashing RED
		Registered + Connected		GREEN

SCREEN EXAMPLES

The following screenshots show the GXP2170 screen's first two pages:

Figure 6: Screen Example - Page 1

Figure 7: Screen Example - Page 2

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