

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



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

	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

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

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 \rightarrow Programmable Keys \rightarrow Virtual Multi-Purpose Keys.

General Settings			-			
Call Features	Order	Mode	Account	Description	Value	
Multicast Paging	1	LINE	1			Edit VPK
Ring Tone	2	LINE	2			Edit VPK
Audio Control						
LCD Display	3	LINE	3			Edit VPK
LED Control	4	LINE	4			Edit VPK
Date and Time	5	LINE	5			Edit VPK
Web Service	6	LINE	6			Edit VPK
XML Applications	7	None	1			Edit VPK
Programmable Keys		None	1			Edit VPK
Virtual Multi-Purpose Keys	9	None	1			Edit VPK
Programmable Keys	10	None	1			Edit VPK
Extension Boards		None	1			Edit VPK
Broadsoft	, 	None	1			Edit VPK
Outbound Notification	다. Add VPK	Reset Save VPK				

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.





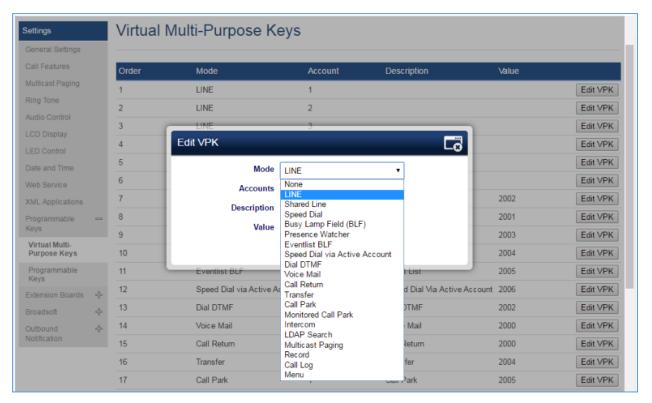


Figure 3: Fixed VPK – Edit

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.

Add VPK		L
Moo Accoun Descriptio Valu	n]

Figure 4: Add VPK





- 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.

Neb Service		U	LINL	v			LUILVEN
KML Applications		7	Shared Line	1 5	Shared Line	2002	Edit VPK
Programmable		8	Speed Dial	1 5	Speed Dial	2001	Edit VPK
(eys		9	Busy Lamp Field (BLF)	1 E	BLF	2003	Edit VPK
Virtual Multi- Purpose Keys		10	Presence Watcher	1 F	Presence Watcher	2004	Edit VPK
Programmable Keys		11	Eventlist BLF	1 E	Event List	2005	Edit VPK
Extension Boards	4	12	Speed Dial via Active Ar	count 1 S	Speed Dial Via Active Ascount	2006	Edit VPK
iroadsoft	4	13	Edit VPK		Lo	2002	Edit VPK
Jutbound	4	14	Mode	Dial DTMF	•	2000	Edit VPK
Notification		15	Accounts	Speed Dial	-	2000	Edit VPK
		16		Busy Lamp Field (BLF) Presence Watcher		2004	Edit VPK
		17	Description	Eventlist BLF Speed Dial via Active Account		2005	Edit VPK
		18	Value	Dial DTMF		2005	Edit VPK
		19		Voice Mail Call Return		2006	Edit VPK
		20	LDAP Search	Transfer Call Park		2003	Edit VPK
		21	Multicast Paging	Monitored Call Park Intercom	ast paging	2005	Edit VPK
		22	Record	LDAP Search Multicast Paging	t	2004	Edit VPK
		23	Call Log	Record Call Log	.og	2006	Edit VPK
		24	Menu	Menu		2001	Edit 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

Table 2: VPK Modes and Indications							
VPK Mode	Description	State	lcon	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.	Account Unregistered	C,	OFF			
	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 Registered	G	ON			
Busy Lamp Field (BLF)	Busy Lamp Field (BLF) mode allows to monitor status (available, ringing, busy) of an extension.	Offline, Unknown	20	OFF			
	Select the Account to monitor the BLF status. Enter the extension number in the Value field to be monitored.	Terminated	1	GREEN			
		Proceeding	20	RED			
		Ringing (Early)	2	Flashing RED			
		Trying	20	Flashing RED			
		Confirmed	20	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	G	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.	Account not registered	e	OFF			
	Select Account and enter the Voice Mail access number in the Value field.	Account Registered (No new voice mail)	C	OFF			
		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.	No state changes	0	OFF
	This option is not binding to the account and the call will be returned based on the account with the last answered call.			
Transfer	Allows to set a destination number to transfer calls to it (blind transfer) by pressing configured VPK.	Account Unregistered	(٠	OFF
	Select Account , and enter the number in the Value field to be transferred during the call.	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.	Account Unregistered	9	OFF
	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;	Account Registered	0	OFF
	• 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.			
Intercom	Allows to set a VPK as intercom button to a specific destination with auto-answer instruction.	Account Unregistered	((=))	OFF
	When the call is initiated, SIP INVITE sent towards destination extension (via SIP server) will include Alert-info header with Auto-answer=0 parameter.	Account Registered	((=))	OFF
	Select Account , and enter the extension number in the Value field to do the intercom.			
LDAP	This option is to narrow the LDAP search scope.			
Search	• 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.			
	<u>For example:</u> If users set VPK as "LDAP Search" for "Account 1", and set filters: Description -> 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.	No State		OFF





Record Allows users to record ongoing calls. Recording needs to be supported on the server to use this feature. Idle Image: Imag	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	<u>.</u>	OFF
Call Log This Key is a shortcut to Call History. No state Image: Coll Coll Coll Coll Coll Coll Coll Col	Record		Idle	REC	OFF
MenuThis Key is a shortcut to the Menu button.No stateImage: Constant of the status o			Recording	REC	Flashing
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. Offline, Unknown Image: Construction of the presence status. Enter the extension number in the Value field to be monitored. Available Image: Construction of the presence status. Enter the extension in the Value field, and enter the call park extension in the Value field. Offline, Unknown Image: Construction of the parked call via VPK button's LED. Select account from Account field, and enter the call park extension in the Value field. Offline, Unknown Image: Construction of the parked call via VPK button's LED. Call Parked Image: Construction of the parked call via VPK button's LED. GREEN Eventilist Eventilist BLF allows to monitor a list of extension similar to BLF, administrator needs to configure Eventilist BLF on server side and provide Eventilist BLF URI on the phone. Call Parked Image: Construction of the Eventilist BLF on server side and provide Eventilist BLF URI' (Account X + SIP Settings + Advanced Features). Offline, Unknown Image: Construction of the Eventilist BLF URI' (Account X + SIP Reputer of the extension number in the Value field to be monitored and make sure to specify "Eventilist BLF URI' (Account X + SIP Settings + Advanced Features). RED 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. Image: Confirmed Image: Confirmed Image: Confirmed Image: Confirmed Image: C	Call Log	This Key is a shortcut to Call History.	No state	6	OFF
Watcher status of an extension, this feature needs to be supported by SIP server to use it. Offline, Unknown Image: Constraint of the server to use it. Offline, Unknown Image: Constraint of the server to use it. GREEN Monitored Call Park This feature allows to park/pick up the call, and monitor the parked call via VPK button's LED. Offline, Unknown Image: Constraint of the server to retrieve status of monitored parking lot. Offline, Unknown Image: Constraint of the server to retrieve status of monitored parking lot. GREEN Eventist BLF Eventist BLF allows to monitor a list of extension similar to select the Account to monitor the Eventist BLF on server side and provide Eventist BLF URI on the phone. Offline, Unknown Image: Constraint of the server side and provide Eventist BLF URI on the phone. Select the Account to monitor the Eventist BLF Status. Enter the extension number in the Value field to be monitored and make sure to specify "Eventist BLF URI" (Account X → SIP Settings → Advanced Features). Offline, Unknown Image: Constraint of RED Line Regular line key to open up a line and switch line. The Description and Value fields can be left blank. Unregistered + Idle (No IM, Voice mail, No Call Forward) Image: Confirmed Imag	Menu	This Key is a shortcut to the Menu button.	No state	Ľ	OFF
Select the Account to monitor the presence status. Enter the extension number in the Value field to be monitored.AvailableImage: Comparison of the text of the t		status of an extension. this feature needs to be supported by	Offline, Unknown	20	OFF
Call Park parked call via VPK button's LED. Online, Unknown OFF Select account from Account field, and enter the call park extension in the Value field. Available Image: Call Via VPK button's LED. Note: The phone sends SUBSCRIBE to the server to retrieve status of monitored parking lot. Call Parked Image: Call Via VPK button's LED. RED Eventist BLF allows to monitor a list of extension similar to BLF, administrator needs to configure Eventist BLF on server side and provide Eventist BLF URI on the phone. Offline, Unknown Image: Call Via VPK button's LED. Eventist BLF allows to monitor the Eventist BLF status. Entre the extension number in the Value field to be monitored and make sure to specify "Eventist BLF URI" (Account X \rightarrow SIP Settings \rightarrow Advanced Features). Proceeding Image: RED Line Regular line key to open up a line and switch line. Unregistered (No IM, Voice mail, No Call Forward) Image: RED Line Regular line key to open up a line and switch line. Unregistered + Idle (No IM, Voice mail, No Call Forward) Image: RED Line Regular line key to open up a line and switch line. Unregistered + Idle (No IM, Voice mail, No Call Forward) Image: RED Line Regular line key to open up a line and switch line. Unregistered + Idle (No IM, Voice mail, No Call Forward) Image: RED Line Regular line key to open up a line and s		Select the Account to monitor the presence status. Enter the	Available	2	GREEN
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status of monitored parking lot. Image: Construction of the status of monitor of the status of the sta			Available	1	GREEN
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Voice mail OFF Registered + IM + Voice OFF			(No IM, Voice mail, No		OFF
				a	OFF
				1	OFF





Unregistered + IM (No Voice mail)	2	OFF
Registered + IM (No Voice mail)	包	OFF
Unregistered + Voice Mail (No IM)		OFF
Registered + Voice Mail (No IM)		OFF
Unregistered + Call Forward All (No IM, No Voice Mail)	6	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
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Unregistered + Call Forward Busy (No IM, No Voice Mail, No Call Forward Delay)	(¢	OFF
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Registered + Ringing	۲	Flashing RED
Registered + On Hold	Ľ	Flashing GREEN
Registered + Connected + Incoming Call	હ	GREEN
Registered + Connected + Outgoing Call	Ľ	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: <u>BS_SCA_conf_Guide</u>	Unregistered	2	OFF
		Registered + Not support SCA Call-info header	G	OFF
		Registered + Not support SCA or SCA Failed	C	OFF
		Registered + Idle	5	OFF
		Registered + Seized	£	RED
		Registered + Processing	£	Flashing GREEN
		Registered + Alert	2	Flashing RED
		Registered + Hold by user	2	Flashing GREEN
		Registered + Hold by the other party	5	Flashing RED
		Registered + Connected	2	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

