# Grandstream Networks, Inc.

## UCM6XXX Configuration Guide for Remote Extensions

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# INTRODUCTION

One of the major benefits using UCM6XXX VoIP IPPBX systems is "Clients' Mobility" allowing users to be connected from remote locations such as home office, remote office to the VoIP system and use it as if they are locally connected, enjoying all VoIP features (making/receiving calls between extensions, voicemail, call transfer, video calls, conference, using UCM6XXX resources such as SIP and analog trunks remotely…).

Customers using UCM6XXX are no more restricted to be physically connected to the same network as UCM6XXX, opening borders for them to be connected from anywhere in the world across Internet network.

The UCM6XXX should be connected to Internet (using router with NAT) and an easy configuration needs to be made to achieve this as described in following sections in this guide.
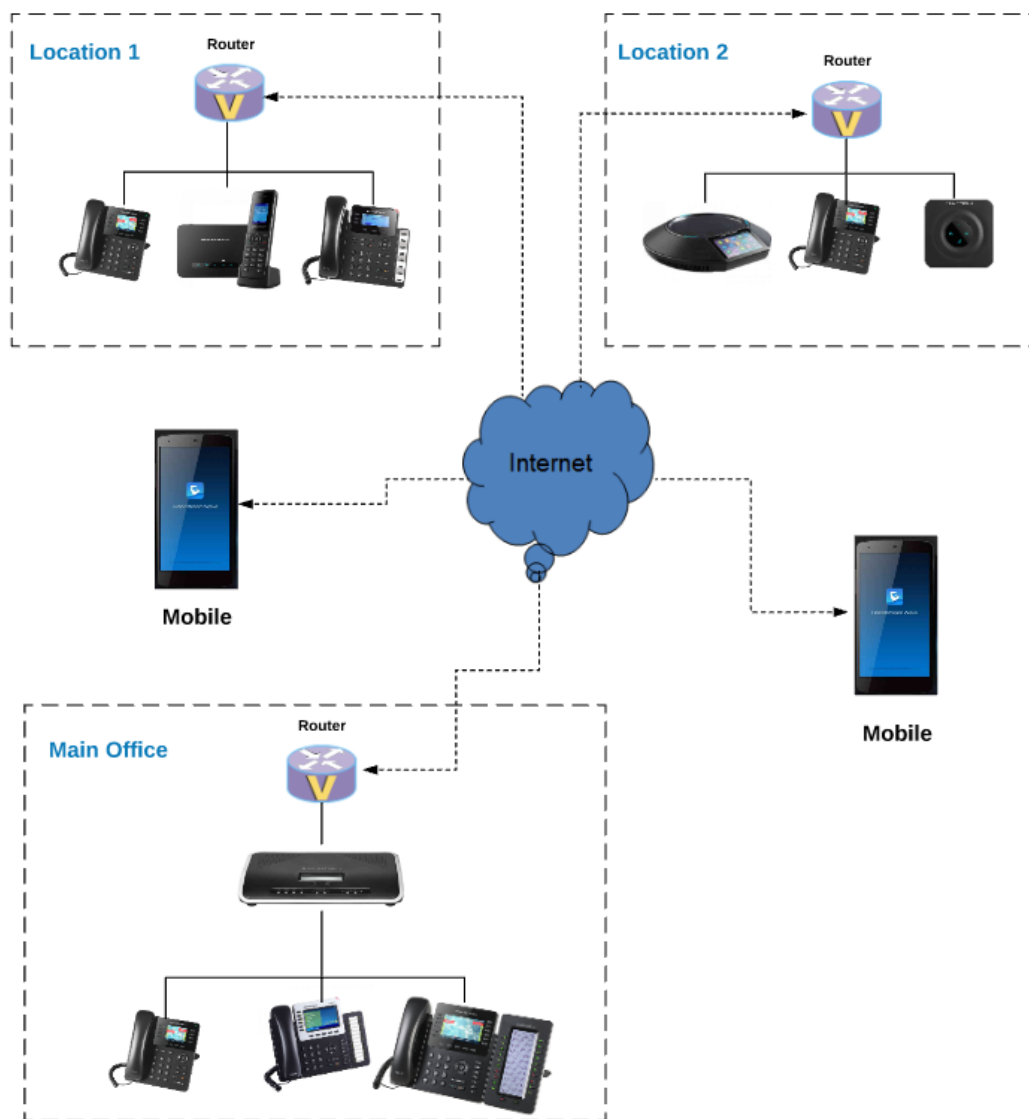


**Figure 1: UCM6XXX behind NAT Scenario**

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# NAT CONFIGURATION ON UCM6XXX

## Prerequisites

In this guide, we assume the following:

**On the UCM6XXX:**
- Extensions previously created.
- UCM6XXX is using default SIP port 5060 and RTP range 10000-20000.
  **Note**: If using different ports, make sure to open them on the router.

**On the router:**
- SIP ALG feature is disabled.
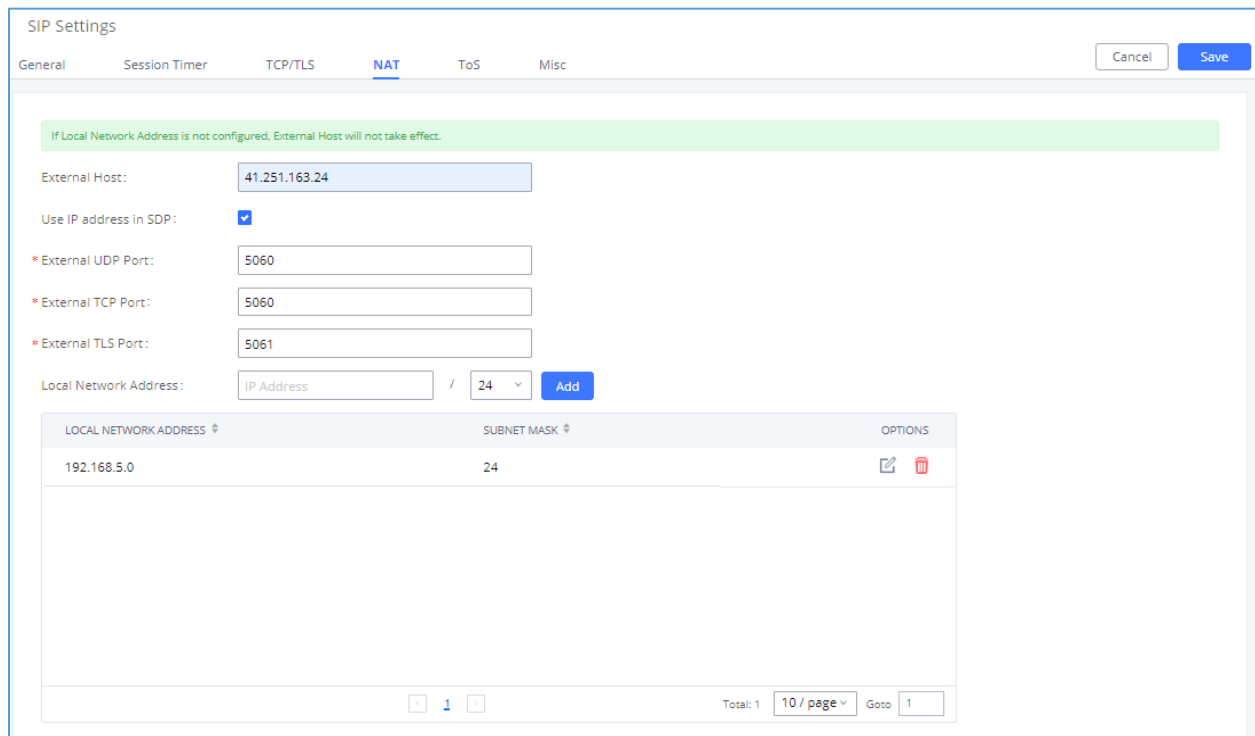- Ports forwarding to UCM6XXX configured.

**General:**
- Public Static IP is available. For example: **212.156.69.86**.
- DDNS account (if no public static IP is available). For example: **gstest.ddns.com**.

## UCM6XXX NAT Settings

At first, the UCM6XXX needs to be configured with its external IP address or domain name (if using DDNS) to be reachable from external networks/Internet allowing remote users to register their extensions, make/receive calls and use other call features. Following steps provide needed configuration:

1. Access UCM6XXX web GUI→**PBX Settings**→**SIP Settings**→**NAT**.
2. Configure the settings as following:

**Figure 2: NAT Settings**

| External Host | Static IP address and port used in outbound SIP messages if the UCM6XXX is behind NAT. If it is a host name, it will only be looked up once. <br> In this guide: <br> **212.156.69.86** using public IP. <br> **gstest.ddns.com** using DDNS. |
|---|---|
| Use IP address in SDP | Check to enable this parameter (recommended), the SDP connection will use the IP address resolved from the external host. |
| External UDP port | Configures the externally mapped UDP port when the UCM6XXX is behind a static NAT or PAT. <br> In this guide: Keep default port **5060**. |
| External TCP port | Configures the externally mapped TCP port when the UCM6XXX is behind a static NAT or PAT. <br> In this guide: Keep default port **5060**. |
| External TLS port | Configures the externally mapped TLS port when the UCM6XXX is behind a static NAT or PAT. <br> In this guide: Keep default port **5061**. |
| Local Network Address | Specifies a list of network addresses that are considered inside of the NAT network. Multiple entries are allowed. If not configured, the external IP address will not be set correctly. <br> In this guide: <br> **192.168.5.0/24** and **192.168.6.0/24** used by local phones. |

3. Press ![Save] button to store the configuration.

4. Press ![OK] button in "Information prompt" window to reboot the UCM6XXX and apply the configuration.
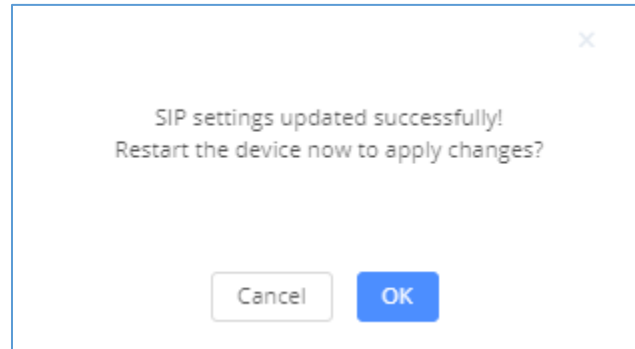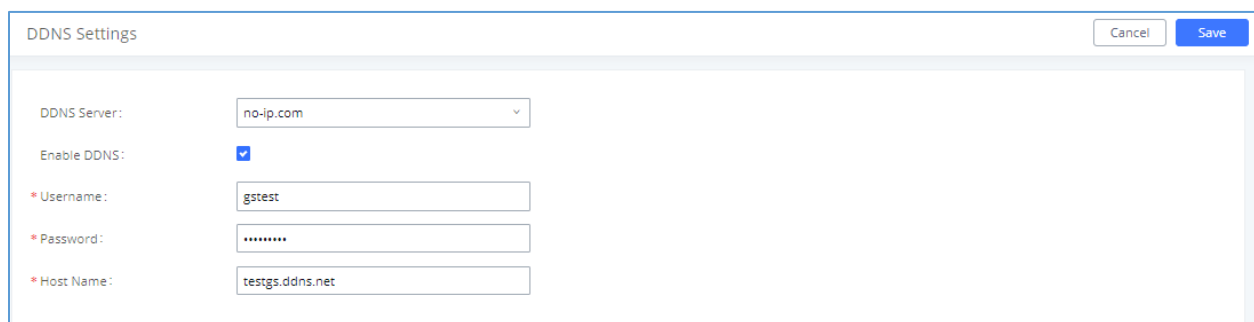


**Figure 3: Prompt Information**

## Configuring DDNS Settings (Optional)

In environments where public static IP is not available, customers may use DDNS (Dynamic DNS) to avoid the need to assign allocated dynamic public IP each time on UCM6XXX (NAT settings) and on client sides when public IP is updated from the provider.

Assuming DDNS account is available, follow below steps to configure:

1. Access UCM6XXX web GUI→**System Settings**→**DDNS Settings**.
2. Select **DDNS Server** from dropdown list. (Available servers are: "dydns.org", "freedns.afraid.org", "zoneedit.com", "no-ip.com" and "oray.net").
3. Fill **Username**, **Password** and **Hostname** as given from DDNS provider.
4. **Save** and **Apply** the changes.



**Figure 4: DDNS Settings Configuration**

## Configuring NAT Extension Settings

When the UCM6XXX is on a public IP communicating with devices hidden behind NAT (e.g., broadband router), **NAT** parameter needs to be enabled on extensions to use on remote phones (enabled by default).

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**Note:** If there is one-way audio issue, usually it's related to NAT configuration or Firewall's support of SIP and RTP ports.

Follow below instructions to check and enable NAT setting on needed extensions:

1. Access UCM6XXX web GUI→**Extension / Trunk**→**Extensions**.

2. Select extension and press to edit the settings.

3. Go to **Media** tab and check **NAT** parameter.

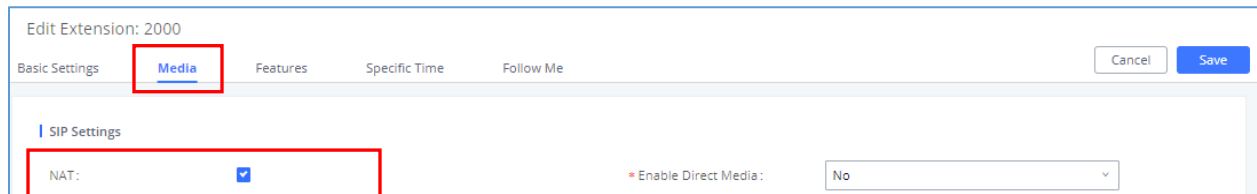4. Press **Save** and **Apply Changes** buttons to store and apply configuration.

**Figure 5: Enable NAT on Extension Settings**
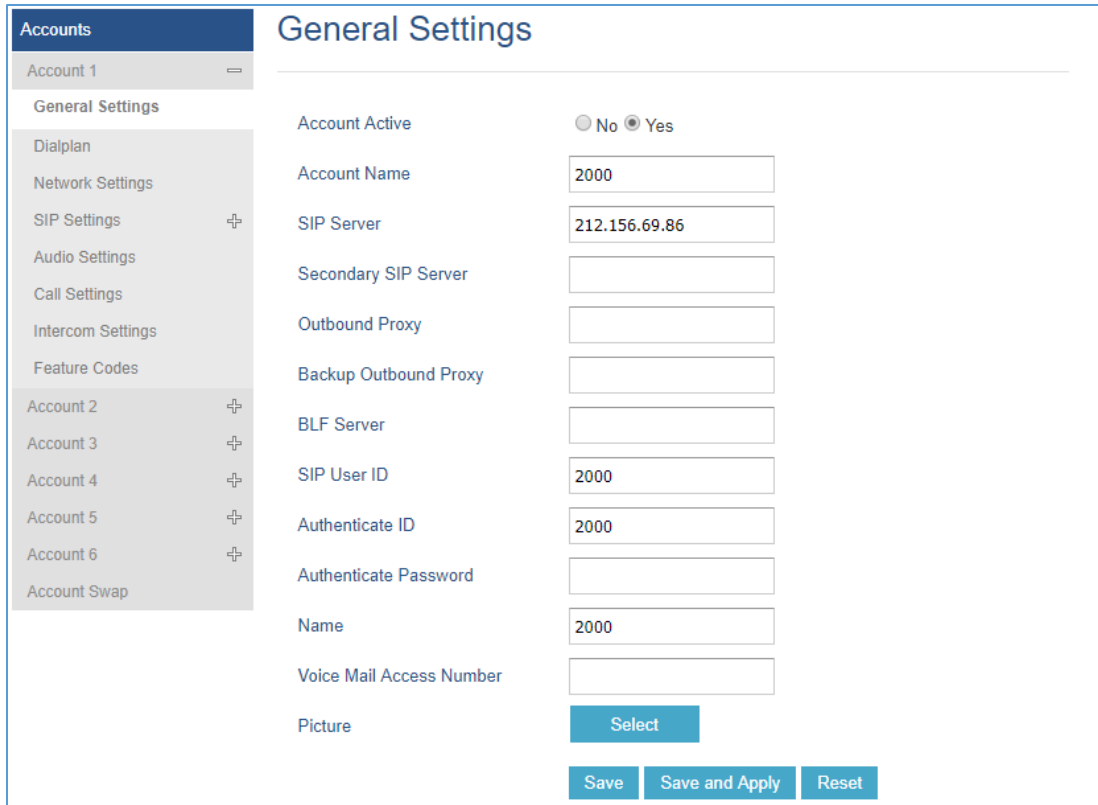
# SIP CLIENT CONFIGURATION SAMPLE

This chapter provides basic configuration to be done on remote SIP clients.
In this guide, GXP2170 is used as example for manual configuration and GS-Wave (free mobile softphone) for auto-configuration.

## Manual Configuration using GXP2170

1. Access phone web GUI→**Accounts**→**General Settings**.

2. Type in extension credentials including **SIP User ID**, **Authenticate ID** and **Authenticate Password**.

3. In **SIP Server** field, type in value of "External Host". Please refer to [UCM6XXX NAT Settings].
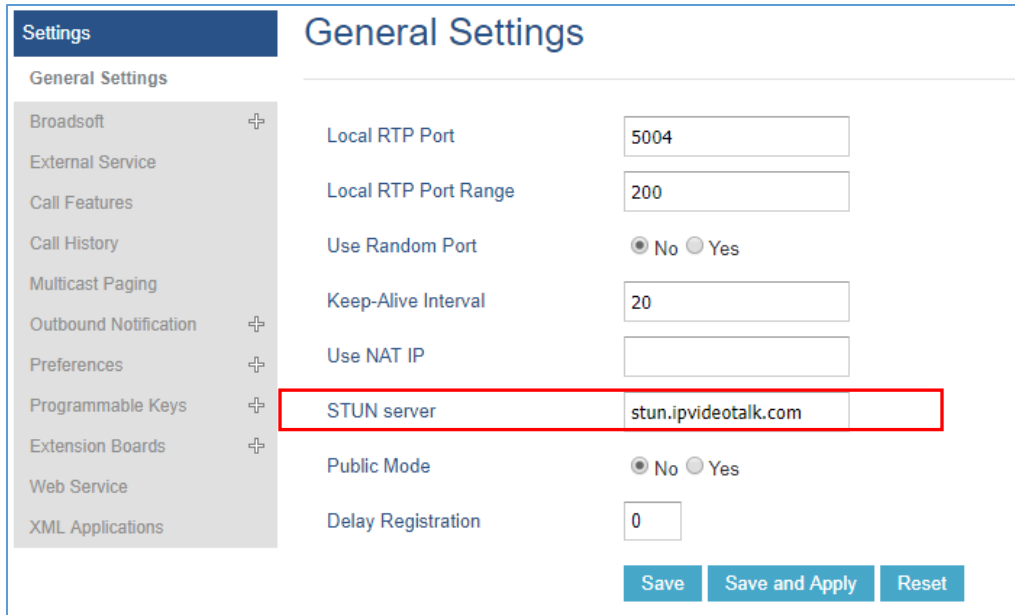
4. Click "**Save and Apply**".

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**Figure 6: Account Manual Configuration**

If the phone is not registered at this stage, users can adjust NAT settings on the phone side as described in below instructions:

1. Access the phone web GUI→**Settings**→**General Settings**.

2. Configure **STUN Server**. For example: "stun.ipvideotalk.com".
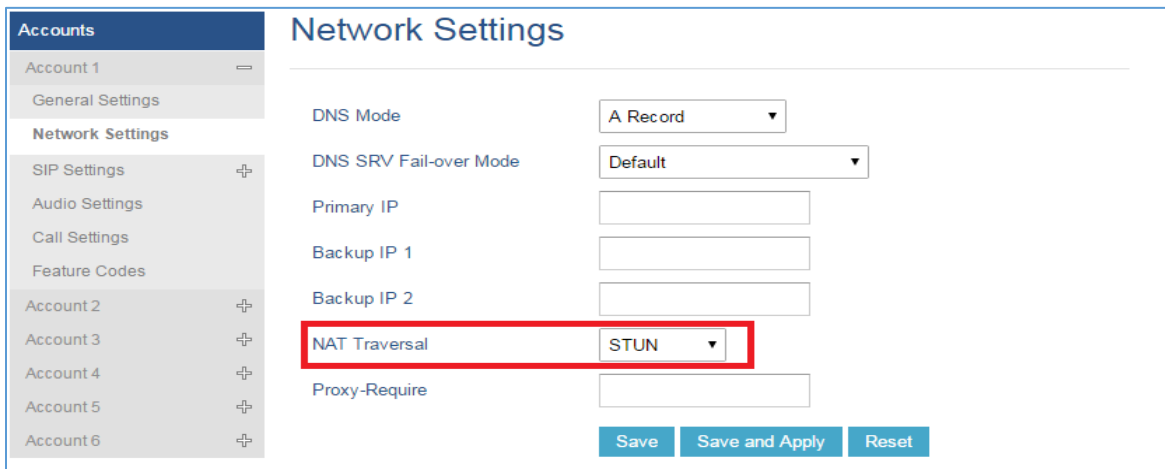
3. Click on **Save and Apply**.

**Figure 7: General Settings – STUN Server**

4.  Go to **Account→Account X→Network Settings**.

5.  Set **NAT Traversal** to **STUN** as shown below.



**Figure 8: Network Settings – NAT Traversal**

**Note:** STUN protocol allows phones behind NAT router to know the external IP address and type of NAT used on the router. If symmetric NAT is detected, STUN will not work. Users may use UPnP protocol if supported on the router, or set NAT traversal to "NO" or "Keep Alive" and open necessary ports for SIP and RTP on the router. It's highly recommended to disable SIP ALG on the router.

## Auto-Configuration using GS-Wave

UCM6XXX has the ability to send extension credentials via email to GS-Wave mobile SIP client to be auto-configured. The following steps describe needed instructions:

**Notes:**

- Email settings need to be re-configured on the UCM6XXX.
- Extension needs to have a valid email address configured.

1. Access UCM6XXX web GUI→**Extension / Trunk**→**Extensions**.
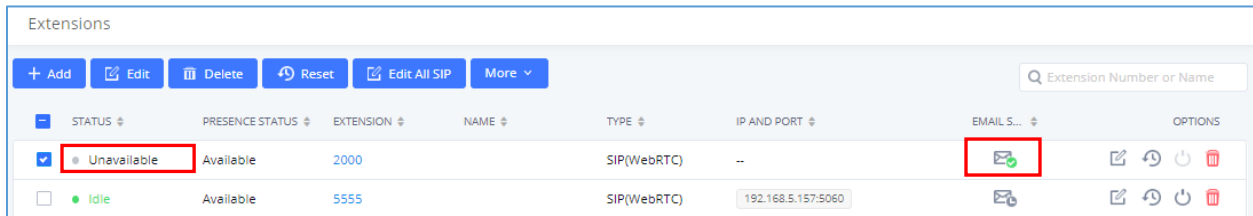2. Select the Extension and click on **"More"** then **"E-mail Notification"** button.



**Figure 9: Auto-configuration – Email to User**

3. Press **OK** in "Prompt information" pop-up window.

Once the email is sent the **Email Status** (in Figure 9) will change to "Sent". And the User will receive an email containing information about the account as shown below.



**Figure 10: Extension Information – QR Code**

After receiving the email, follow below steps to auto-configure GS-Wave account on the mobile phone.

(GSWave is availabe in Google PlayStore):

1. Open GS-Wave softphone application installed on Android™ or iOS™ mobile phones.
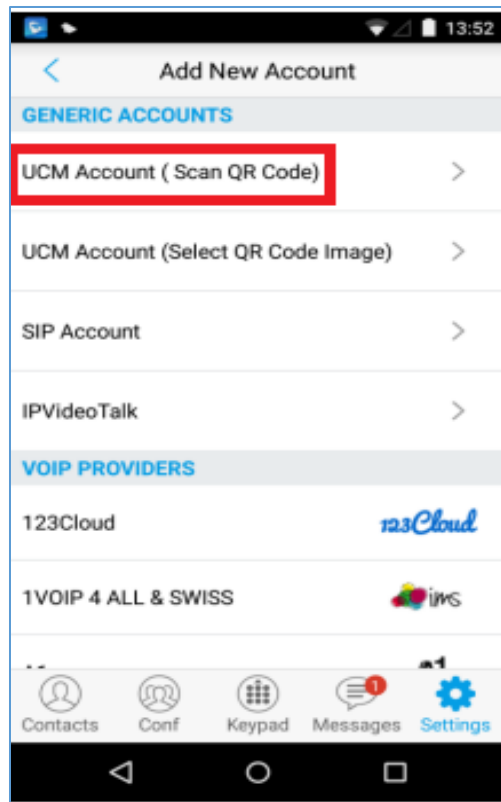2. Access to **Settings→Add New Account→UCM Account (Scan QR Code).**


Figure 11: GS-Wave - Scan QR Code

3. Using integrated QR Code reader tool, scan **Public IP Address** QR Code to get extension credentials. Please refer to [Figure 10].

GS-Wave will create the account using provided information from QR Code and register on the UCM6XXX.

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