

Grandstream Networks, Inc.

UCM6xxx Configuration Guide for Remote Extensions





Table of Content

| INTRODUCTION | 3 |
|--------------------------------------|---|
| NAT CONFIGURATION ON UCM6XXX | 4 |
| Prerequisites | 4 |
| UCM6xxx NAT Settings | 4 |
| Configuring DDNS Settings (Optional) | 6 |
| Configuring NAT Extension Settings | 6 |
| SIP CLIENT CONFIGURATION SAMPLE | 8 |
| Manual Configuration using GXP2170 | 8 |
| Auto-Configuration using GS-Wave | 9 |

Table of Figures

| Figure 1: UCM6xxx behind NAT Scenario | 3 |
|--|------|
| Figure 2: NAT Settings | 5 |
| Figure 3: Prompt Information | 6 |
| Figure 4: DDNS Settings Configuration | 6 |
| Figure 5: Enable NAT on Extension Settings | 7 |
| Figure 6: Account Manual Configuration | 8 |
| Figure 7: General Settings – STUN Server | 9 |
| Figure 8: Network Settings – NAT Traversal | 9 |
| Figure 9: Auto-configuration – Email To User | . 10 |
| Figure 10: Extension Information – QR Code | . 10 |
| Figure 11: GS-Wave - Scan QR Code | . 11 |



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





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 > SIP Settings > NAT**.
- 2. Configure the settings as following:





| PBX >> SIP Settings >> NAT C | | | | | |
|--|---------------|---|----------------------|--|--|
| SIP NAT | | | | | |
| External Host: | 212.156.69.86 | | | | |
| Use IP address in SDP: | ~ | | | | |
| External UDP Port [*] : | 5060 | | | | |
| External TCP Port [*] : | 5060 | | | | |
| (i) External TLS Port*: | 5061 | | | | |
| Create Local Network Addres | Cancel Save | etwork Address d, please click on the "Enable Local Network Address" button. | | | |
| | | | \/iew: 10 ▼ | | |
| Local Network A | ddress ⊘ | Subnet Mask | Options | | |
| 192.168.5. | D | 24 | ∕ | | |
| 192.168.6. | D | 24 | / 🛍 | | |
| Total: 2 Show: 1/1 Go to: | Go | | First Prev Next Last | | |

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. In this guide: 212.156.69.86 using public IP. 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. 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. 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. In this guide: Keep default port 5061 . |
| Create 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. <u>In this guide</u> : 192.168.5.0/24 and 192.168.6.0/24 used by local phones. Customers can set 0.0.0.0/24 to allow all network addresses to be considered as local (not recommended for security reasons) |
| Enable Local Network Address | Enable local network addresses. |





- 3. Press button to store the configuration.
- 4. Press OK button in "Information prompt" window to reboot the UCM6xxx and apply the configuration.

| Prompt Information | X |
|---|---|
| Data is saved successfully! | |
| Do you want to restart the device now to make | |
| the changes take effect? | |
| Cancel | |
| 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:

and

- 1. Access UCM6xxx web GUI > Settings > Network Settings > DDNS Settings.
- Select DDNS Server from dropdown list. (Available servers are: "dydns.org", "freedns.afraid.org", "zoneedit.com", "no-ip.com" and "oray.net").

buttons to store and apply the configuration.

3. Fill Username, Password and Hostname as given from DDNS provider.

Apply Changes

| | Settings >> Network Set | tings >> DDNS Settings |
|--------------------|------------------------------|---|
| User Management | DDNS Settings | |
| Network Settings | DDNS allows you to access yo | pur network using domain names instead of IP address. |
| - Basic Settings | DDNS Settings | |
| - DHCP Client List | DDNS Server: | no-ip.com 🔻 |
| - 802.1X | (i) Enable DDNS: | \checkmark |
| - Static Routes | O | |
| - Port Forwarding | Username : | gstest |
| - OpenVPN | (i) Password [*] : | ***** |
| - DDNS Settings | (i) Host Name*: | testgs.ddns.net |
| Firewall | | |
| LDAP Server | | Cancel Save |

Figure 4: DDNS Settings Configuration

Configuring NAT Extension Settings



4. Click on



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).

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 > PBX > Basic/Call Routes > Extensions.
- 2. Select extension and press *m* 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.

| Edit Extension: 1000 |) | | | x |
|----------------------|-------------------------|-----------------------|----|---|
| Basic Settings Media | a Features Specific Tim | ne | | |
| SIP Settings | | | | |
| I) NAT: | | (i) Can Direct Media: | No | Y |

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.
- In SIP Server field, type in value of "External Host". Please refer to [UCM6xxx NAT Settings].
- 4. Click "Save and Apply".

| Accounts | | General Settings | |
|------------------|---|-----------------------|---------------------------|
| Account 1 | - | | |
| General Settings | | Account Active | No Vas |
| Network Settings | | / debaint / lettve | |
| SIP Settings | ÷ | Account Name | 2000 |
| Audio Settings | | SIP Server | 212.156.69.86 |
| Call Settings | | Secondary SIP Server | |
| Feature Codes | | Secondary on Server | |
| Account 2 | ÷ | Outbound Proxy | |
| Account 3 | ÷ | Backup Outbound Proxy | |
| Account 4 | ÷ | BLE Server | |
| Account 5 | ÷ | DLI Selver | |
| Account 6 | ÷ | SIP User ID | 2000 |
| | | Authenticate ID | 2000 |
| | | Authenticate Password | |
| | | Name | 2000 |
| | | Voice Mail UserID | |
| | | | Save Save and Apply Reset |
| | | Figure 6: Acc | ount 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.





| Settings | | General Setting | <u>js</u> | |
|-----------------------|-----|---------------------|----------------------|-------|
| General Settings | | | | |
| Call Features | | Local RTP Port | 5004 | |
| Multicast Paging | | | | |
| Ring Tone | | Use Random Port | No Ves | |
| Audio Control | | Keep-Alive Interval | 20 | |
| LCD Display | | Use NAT IP | | |
| LED Control | | | | - |
| Date and Time | | STUN server | stun.ipvideotalk.com | |
| Web Service | | Public Mode | No O Yes | |
| XML Applications | | | | |
| Programmable Keys | ÷ | | Save Save and Appl | y Res |
| Broadsoft | -fb | | | |
| Outbound Notification | еĝo | | | |

Figure 7: General Settings – STUN Server

- 4. Go to Account > Account X > Network Settings.
- 5. Set **NAT Traversal** to **STUN** as shown below.

| Accounts | | Network Settings | |
|------------------|----|------------------------|---------------------------|
| Account 1 | - | | |
| General Settings | | DNS Mode | A Pasard |
| Network Settings | | Divo mode | A Recold |
| SIP Settings | ÷ | DNS SRV Fail-over Mode | Default v |
| Audio Settings | | Primary IP | |
| Call Settings | | Backup ID 1 | |
| Feature Codes | | Dackup IF | |
| Account 2 | ÷ | Backup IP 2 | |
| Account 3 | ÷ | NAT Traversal | STUN V |
| Account 4 | ÷ | | |
| Account 5 | ÷ | Proxy-Require | |
| Account 6 | 45 | | Save Save and Apply Reset |

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 autoconfigured. 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 > PBX > Basic/Call Routes > Extensions.

Email To User

2. Select the Extension and click on

button.





| PBX > | > Basic/Call Ro | outes >> Extensions | > | | | | |
|-------|-----------------|---------------------|-------------------------|--------------------|----------------|--------------|-----------------|
| Mana | ge Extension | s | | | | | |
| Ш́Е | ktension: | | CallerID Name: | | Search | Show All Ext | ensions |
| Creat | te New Extensio | n 🔹 Modify Select | ed Extensions Dele | te Selected Extens | ions Batch Add | Extensions • | Import Extens * |
| Ema | il To User Au | to Refresh 🗹 | | | | | View: 30 View: |
| | Status | Extension 🔗 | CallerID Name | Terminal Typ | IP and Port | Email Status | Options |
| | • | 1000 | John Smith | SIP | | To Be Sent | / 心 前 |

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 available 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).





| Add New Account | ⊿ 🗋 13:52 |
|------------------------------------|-----------|
| GENERIC ACCOUNTS | |
| UCM Account (Scan QR Code) | > |
| UCM Account (Select QR Code Image) | > |
| SIP Account | > |
| IPVideoTalk | > |
| VOIP PROVIDERS | |
| 123Cloud 12 | 13Cloud |
| 1VOIP 4 ALL & SWISS | a@inus |
| Contacts Conf Keypad Messages | Settings |
| | |

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.

