

## **GXW410x Port Scheduling Schema**

### **Background**

GXW410x is enhanced to have a configurable and flexible port scheduling schema for VOIP to PSTN call flow. Following schema is implemented.

#### **Fixed port scheduling via Local SIP Listen Port mapping**

- Round-robin, this is the current offer and also is the system default. It is also enhanced to hunt from highest port to lower port number.
- Round-robin within each group, flexible port demand on the fly via dialing prefix code.
- Round-robin plus fixed port. User can configure some ports to use round-robin and some to use fixed port.

For fixed port scheduling, users have to configure the “Local SIP Listen Port” setting under Channels web UI page. This will map SIP listening UDP port to a physical port. To make fixed port scheduling work, users also need to change round-robin scheduling to let each fixed port be a stand alone hunt group. Details can be found under web UI field of “Round-robin and/or Flexible”.

For round-robin port scheduling, users can specify one or multiple hunt groups via web UI under Channels. There are max of 4 or 8 hunt groups GXW4104 and GXW4108. Of course, 4 or 8 hunt groups means no additional port to hunt or fixed port scheduling in this case because each hunt group has only one physical port. Whenever there is only one port in hunt group, it means a fixed port scheduling is used.

Within each hunt group, the last port with the highest port number will be scheduled as soon as it is available. It hunts down for next available port to use for outbound calls to PSTN network. For example, if there is one hunt group of port 1,4,5,8, port 8 will be scheduled first for first call and then port 5, and port 4, ...etc. However, if port 8 is in use and an incoming call will be scheduled to port 5 and 3rd call will attempt to be scheduled on port 8 and port 5 first to see if port 8 or 5 is available, if both port are not available at the time when SIP INVITE is received by the system, the 3rd call will be scheduled to use port 4. The round-robin scheduling results in highest port number will process more calls than lower port number. There are two reasons for this. First, VoIP to PSTN call should leave main outside line as free as possible to let outside calls can have a line to dial inside extensions. This way the main outside PSTN line can be plug into first port of the system so that user can reserve the main line for PSTN incoming calls. Secondly, some carriers offer lower long distance call rate or discount rate calls on designated lines. User can plug this line into the highest port

number as possible. This scheduling can take this benefit most when dialing from VOIP to PSTN.

Beside, above round-robin port scheduling, GXW410x offers a demand on the fly to let users to request which port to use via prefix code. For example, if port 6 is reserved for the CFO of the company, the user may configure SIP server to give the CFO a special prefix code or SIP server can add prefix automatically without letting the CFO dial any prefix to use PSTN networks via GXW410x. Those prefix code serve as a request for a certain port for GXW410x. When SIP INVITE reaches GXW410x with this prefix code, GXW410x will attempt to meet its demand first. If the request port is in use by someone, a SIP 503 will send back as response. If not is use, it will serve the request. Note that the schema is only available for 1 stage dialing VoIP to PSTN call flow. Please check web UI field “Prefix to Specify Port” on how to configure.

## General Use Cases

### Fixed port scheduling

To configure system for fixed port scheduling, users have to configure “Local SIP Listen Port” and “Round-robin” fields

For example: use syntax “**ch1-8:5060++**” for **Local SIP Listen Port** to specify mapping line ports and SIP listening port. Users have to use “**rr:1;rr:2; rr:3;rr:4; rr:5;rr:6; rr:7;rr:8;**” for Round-robin field.

Users have flexibility to have some ports to use fix port scheduling and some ports round-robin scheduling,

Use “**ch1-4:7788++**” to fix port scheduling of port 1-4

Use “**rr:1;rr:2; rr:3;rr:4;**” to port each individual port as a hunt group

### Group round-robin port scheduling

A simple case is to have port 1-4 and 5-8 grouped as two hunt group, round-robin is achieved within each group. Port will not be scheduled to across different hunt groups because each group may have its own line characteristics.

For each group, all lines should be configured as homogenous parameters. For example, all should have T38 capability in one group or in one SIP Profile server. Otherwise, round-robin hunt group may have problem to setup call.

### Dynamic request specific port

IP side user can dial 99 (default prefix code to specify port) to request first port for the call. If a prefix code is used, system will not observe other port scheduling such as fix port or round-

robin group. In another word, this per call based dynamic scheduling is of higher scheduling priority

Users may configure SIP server to add this prefix code and port request. In this case, SIP server has sort of control of port scheduling and SIP call load balancing.

### **Take advantage of carrier offers**

If carrier offers discount long distance or international rate, users can take advantages to have this port scheduled and rescheduled heavily as long as the line is not busy.

To achieve this, users may configure the discount line to be in a group of highest port number. For example, uses can put the discount rate line into port 4 or 8 and group it in a hunt group so that it will be rescheduled to use as soon as it is idle.

To keep users' main office line open for outside incoming calls, users can put the line in a least port number such as 1 or 4 and configure it in a hunt group so that outbound calls from VOIP to PSTN will use as less as possible of this line to yield for PSTN incoming calls.

## **Questions and Answers**

### **Why do I keep getting SIP 403 Forbidden message?**

GXW410X has outgoing PSTN call control mechanism that only allows trusted entities to place calls. When entities are not authenticated, a SIP 403 Forbidden will be sent. When this happens, please check the following settings:

Make sure IP address of SIP INVITE is in SIP Profile, or Offhook Auto Dial SIP Server,  
Make sure outgoing PSTN number is within Dial-plan permission,

### **Do I have to use this new Port Scheduling schema?**

No, you can leave everything to default and it will not affect your current setup at all.

### **Why doesn't the hunt group use what I specify via Round-robin schema?**

For round-robin scheduling within hunt group, remember "Local SIP Listen Port" also takes effect. Users have to group homogenous line into one group and SIP INVITE message are sent to the UDP port within the hunt group lines. Homogenous lines means all lines in a group are of same configuration of call features and capability on outgoing calls. Hunt group doesn't necessarily mean in line with carrier side hunt group. However, we recommend it to be in sync for easy maintenance.