

# Routing setup guide

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## About

With the routing you can define which call where to be routed.

For example you can define rules like calls with 123 prefix go to SIP Server A and calls with prefix 45 to be routed to SIP Server B.

With the Mizu softswitch you can build sophisticated routing scenarios. The routing is usually based on traffic direction, time and other circumstances. Load balancing, LCR, BRS and failover are also supported.

In other products the “**Dial plan**” term is used more frequently. In the Mizutech softswitch the dial plan is separated to multiple logical units to make it easier to manage:

- Rules module: you can define various number rewrite and other rules here
- Routing module: you can define the actual outbound routing rules here as described in this document
- The routing can be also influenced by other settings such as Users and devices related settings (for example max lines restrictions), BRS statistics, Access Lists (blacklists) and others.

## Call types

Calls between **internal users** are routed automatically and there are no need to specify any routing rule for this. The whole routing module is mainly for outbound call routing.

For the **inbound routing** usually there are no special settings. You just have to create one or more traffic sender users and set its authentication properly. No routing rules are necessary for inbound. On incoming call the mizu voip server will do the followings:

1. firewalling, dos attack protection checks and other maintenance works
2. caller authentication
3. if there is a local enduser match, than the call will be routed to it (or call forwarding, voicemail, etc)
4. otherwise the call is sent to another voip server (trunk/gateway/proxy) based on the outbound routing rules.

**The outbound routing** is influenced mainly by the followings:

1. User settings (max lines settings is the most important here. All other settings –like user priority- should be avoided on user level because almost all routing pattern can be defined using the “Routing” form)
2. Rules (it might rewrite the number in a way that it influences the routing)
3. Routing settings (pattern match and the destination priority list/pattern)
4. Load balancing, LCR or BRS for the directions with the same priority
5. All prioritization can be overwritten by failover on bad statistics conditions

This is a simplified description as the routing might be influences by many other things such as access lists, user groups or number portability.

## Routing form

To define the routing, launch the MizuManage admin client application and open the Routing form (below the Routing node in the left tree view).

On the **left side** you can define the routing patterns. With other words here you define different circumstances to be handled.

For example let’s suppose that you have two SIP servers. SIP Server A provides very good prices to Germany and SIP Server B provides A-Z termination.

In this case you will define two patterns:

- Pattern A: you can name it as "Germany" and set 49 as the called prefix (Germany country code)
- Pattern B: you can name it as "All" and don't set any definitions for this so it will catch all traffic

It is very important to set the **priority** of your "Germany" pattern higher because the routing patterns are checked in priority descending order. If the called number begins with 49 then the Germany pattern will catch the call, otherwise it will continue to check the next rule which will be the "All" rule.

On the **right side** you can add SIP Server(s) to a pattern.

For example if you have two good trunks to Germany, then assign both servers for your "Germany" list.

The **priority** number in this field is also important. If you set the priority to the same number for all servers, then you get load balancing or BRS (discussed below). If you set different priorities then the server will try to route all calls to the highest priority server and will failback to other server(s) only in some conditions such as server is unreachable, bad statistics, maximum defined channels reached and other circumstances.

Of course, you can define more complex rules such as route to SIP Server C only from a group of users or at a specific time only. Check the fields at the "Directory Definitions" section for the possibilities. Of course, you can also combine them.

## Step by Step setup

1. First you need one or more servers (other carriers) where you will route your traffic. These are called '**SIP Servers**' (or H323 gateway if you are using the H323 protocol)

SIP Servers can be created and configured in the MManage -> Users and Devices -> SIP Server: Click on the 'sipserver\_template' -> click 'New User' button -> popup window: click 'Yes'.

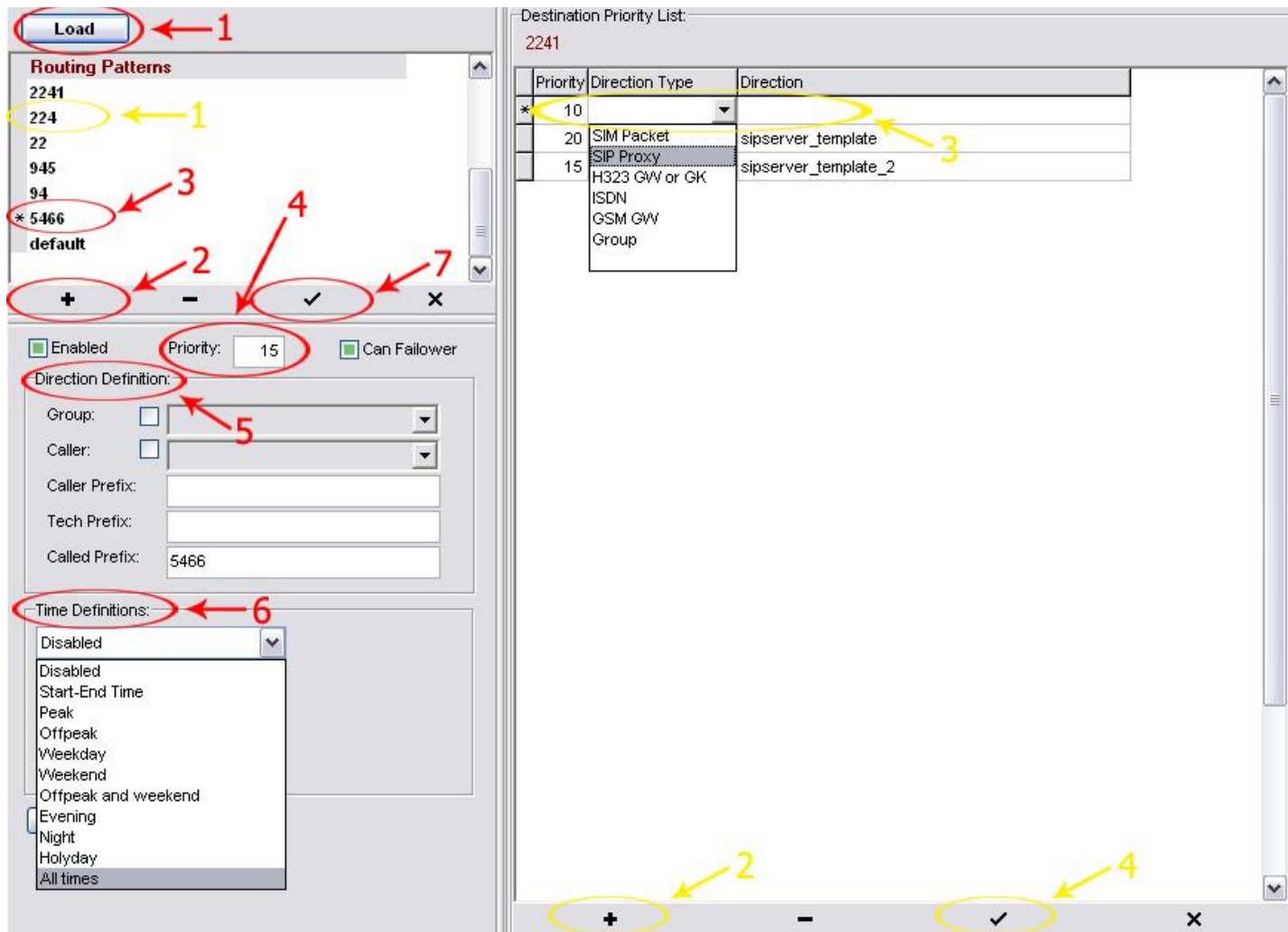
Now we have the new server in the 'edit' window, where we will configure it: fill in the 'Username' field accordingly and the most important, the 'IP' field, which is the address where the server will direct calls. This field can also contain a domain name instead of IP address. In most cases the rest of the settings are better to be left as they are. And finally save these settings.

2. When finished creating and configuring the SIP Servers, go to MManage -> Routing -> **Routing**.

On the left are the Routing Patterns and on the right the Destination Priority Lists. Every Routing Pattern has its own Destination Priority List.

When setting the priority for the routing patterns, for example if the routing is done by 'Called Prefix', then always assign higher priority to the 'longer' prefix:

Ex. If we have three prefixes like: 2241, 224 and 22, assign the highest priority to 2241 and the second highest priority to 224 and the lowest to 22 between the three prefixes. If you would assign the highest priority to 22 between the three prefixes, then the other two patterns would have no sense, because the '22' pattern would route all called numbers with 2241 and 224 prefixes too.



- 1 – (re)load existing patterns
- 2 – click to add new pattern
- 3 – give it a suggestive name
- 4 – define its priority among the patterns
- 5 – set the direction definition; in our case it's the called prefix, but the direction could be: group, caller, caller prefix or tech prefix.
- 6 – set the time definition when the routing pattern is applied (in most cases 'All times')
- 7 – save this pattern

After a pattern is created, its destination priority list must be defined.

- 1 – select a pattern
- 2 – click to add a new destination
- 3 – set the Priority, Direction Type and Direction (most of the cases the direction type is 'SIP Proxy'. After you set this option, in the Direction field you can select from the SIP Servers created earlier.)
- 4 – click to save settings

Routing in the Priority List between servers can be done by setting different priorities(ex. 20, 15, 10...) or by setting same priority to all servers.

If the priority in the list is the **same** for all servers, then the routing rule is defined by a global configuration option named 'brs\_lcr'. This option can be set in the MManage -> Other-> Configurations.

Depending on the value of 'brs\_lcr' the routing rule is:

- 0 – Load balancing– in this case the Mizu server will try to send the same amount of traffic to each server
- 1 – only 'lcr' for not gsm ('lcr' = least cost routing – price lists must be set to work properly)
- 2 – lcr - least cost routing
- 3 – 'brs' for not gsm ('brs' = best route selection)

**4** – brs - best route selection

**5** – brs + lcr

To learn more about how the BRS works, open the BRS form and click on the “Show Demo” button.

The routing process can also be influenced by the **failovering** rules. If one route (SIP server) is set as failover, then its priority is lowered regardless of the routing priority. You can find the details about the failover in the AdminGuide.

For more details use the [Admin Guide](#) or [contact our support](#).

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