

New Rock Technologies, Inc.

MX Voice-Fax Gateway Series

High Availability Configuration Guide

HX4E

MX8A

MX60

MX120

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1 Overview

1.1 Function Definition

In the deployment of VoIP network, New Rock MX-Series VoIP Gateway (referred as gateway below) supports **high availability** architecture with **Primary-Standby**, **Active-Standby** and **Load balancing** mode.

Primary-Standby mode

In this mode, a backup SIP proxy server (referred as SIP server) is configured. The gateway will failover to the backup server automatically when the primary server faults. The gateway detects the failure condition of primary server by sending OPTIONS request to it. If the gateway does not receive the response to OPTIONS request, it will failover to the backup server.

After failover to the backup server, the gateway will still send OPTIONS to the primary server all the time. It switches back to the primary server once the response to the OPTIONS request is received.

Active-Standby mode

In this mode, one SIP proxy server (referred as SIP server) functions as the primary server while other SIP servers function as standby servers.

Either of the following conditions could trigger the failover operation of the gateway:

- Not receiving response to the OPTIONS message from the current SIP server to which the gateway sends or receives call traffic;
- Not receiving response to the REGISTER/INVITE message from the current SIP server to which the gateway send or receives call traffic

The administrator can manually switchover the gateway from the current SIP server to the next available one.

The gateway will redirect call traffic to the designated proxy server in responding to the re-INVITE from the server.

Load balancing mode

In this mode, the clustered SIP servers are all working in active status. Under the coarse grained scheme all endpoints of a gateway are allowed to register on one of the designated servers and under the fine grained scheme the endpoints of a gateway are allowed to register on multiple servers, according to the administrator's load balancing plan. The following features are supported with load balancing:

- The gateway as a whole or endpoints search for the designated sever in the server cluster (a list of servers) using REGISTER/INVITE message in forward circular scheme.
- Server failure detetion is supported by gateway sending OPTIONS to each servers, on which the gateway or endpoints are registered on.

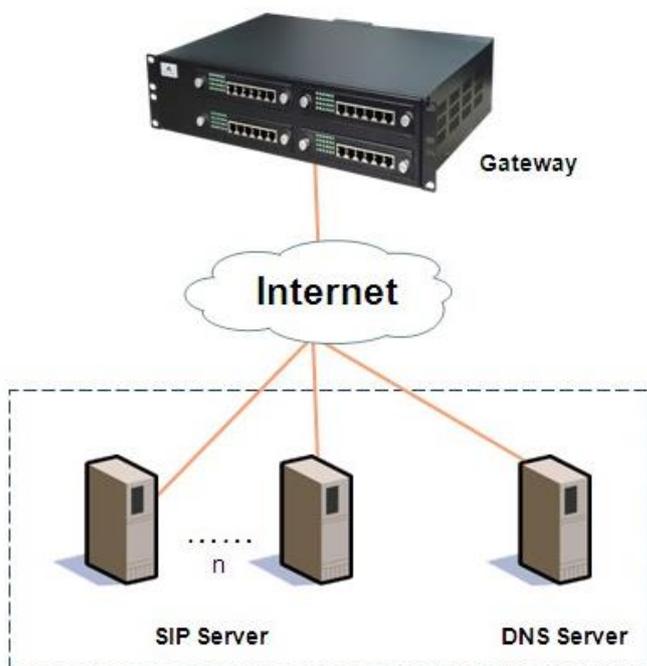
- Upon the condition of no response to OPTIONS or REGISTER/INVITE, the gateway will search for the next available servers for the gateway or endpoints and move the calls to them accordingly

The gateway will redirect call traffic to the designated proxy server in responding to the re-INVITE from the server.

1.2 Server Cluster

The server cluster includes one primary SIP proxy server and one backup SIP proxy server under primary-standby mode, one primary SIP proxy server and up to five standby proxy servers under active-standby mode or six active servers under load balancing mode. The address of the SIP server can be configured manually by the administrator or obtained through DNS SRV record. Topology is shown as Figure 1-1.

Figure 1-1 Server cluster



2 Configuration

2.1 Configuring Primary-Standby Mode

Step1 Click **Basic > SIP**.

Step2 Choose the High availability mode to **Primary-Standby**.

Step3 Fill primary SIP server IP address or domain name in **Registrar server**.

Step4 Fill backup SIP server IP address in **Backup SIP proxy**.

Note: This step is required if an IP address is filled in step 3.

When a domain name is filled in step 3, you can also fill in a backup IP address. This allows the device to failover to the backup IP address if the domain name resolution service fails.

Step5 Enable **Primary server heartbeat detection**, and configure the **OPTIONS request period**.

Step6 Click **Save**.

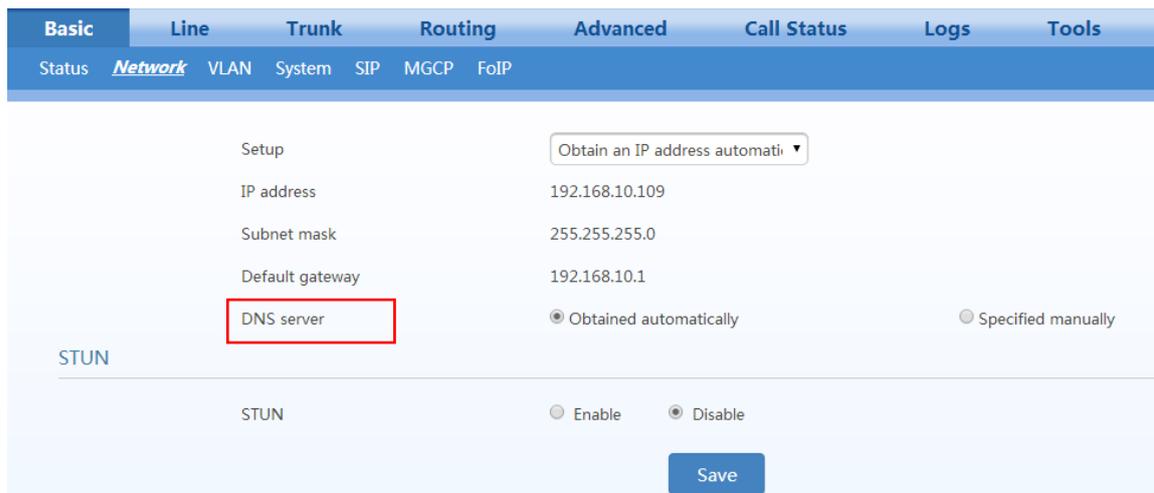
Figure 2-1 Primary-Standby configuration page

The screenshot shows the configuration page for SIP. The 'Registrar server' field is highlighted with a red box. In the 'High availability' section, the 'Mode' dropdown is set to 'Primary-Standby', 'Primary server heartbeat detection' is checked, and the 'OPTIONS request period' is set to 60 seconds. A 'Save' button is located at the bottom right of the configuration area.

Step7 Click **Basic > Network**, make sure DNS server can be obtained automatically or has been specified manually.

Note: This step is required if a domain name is filled in step 3.

Figure 2-2 DNS server configuration page



2.2 Configuring Active-Standby Mode

Step1 Click **Basic > SIP**.

Step2 Choose the High availability mode to **Active-standby**.

Step3 Fill primary SIP server IP address or domain name in **Registrar server**.

Step4 Click **Add** and fill the IP address for the standby SIP proxy server in **Standby SIP server 1**. Repeat it for multiple SIP proxy servers.

Note: This step is required if an IP address is filled in step 3.

When a domain name is filled in step 3, you can also fill in a backup IP address in **Standby SIP server 1**. This allows the device to failover to the backup IP address if the domain name resolution service fails.

Step5 Select to enable or disable **OPTIONS Keep-alive**.

- When **OPTIONS Keep-alive** is enabled, the following timers need to be configured:
 - OPTIONS request period:** the interval between receiving the response (200) from the SIP server to the previous **OPTIONS** and sending the next **OPTIONS**.
 - OPTIONS request timeout:** the period since the sending of the last **OPTIONS** with no response by the SIP server.
- When **OPTIONS Keep-alive** is disabled, the gateway will failover to the standby SIP server if there is no response to the **REGISTER** or **INVITE**.

Step6 Click **Save**.

Figure 2-3 Active-Standby configuration page



Note

The **Switchover** button provides a means to manually switchover the call traffic from the current SIP server to the next available SIP server.

Step7 Click **Basic > Network**, make sure DNS server can be obtained automatically or has been specified manually. See Figure 2-2.

Note: This step is required if a domain name is filled in step 3.

Step8 Click **Trunk > Advanced**, make sure **PSTN failover** is disabled.

Note: This step is required if **OPTIONS Keep-alive** is disabled in step 5.

Figure 2-4 Page to disable PSTN failover

The screenshot shows a configuration page with tabs: Basic, Line, Trunk, Routing, Advanced, Call Status, Logs, Tools. The 'Advanced' tab is selected. Below the tabs are sub-tabs: Phone number, Feature, Batch, and 'Advanced'. The configuration items are as follows:

- Gain to IP: 0 dB
- Gain to PSTN: -3.0 dB
- Impedance: Complex 600 Ω 900 Ω
- Outpulsing delay: 1000 ms (Range: 100 - 3000)
- Caller ID detection: Before ringing
- Ring relay: FXS ring sync with FXO FXS ring independently
- Busy line handle: Voice prompt Hand up
- PSTN failover:**
- Inbound first digit timeout: 24 s (Range: 10 - 60, Default: 24)
- Answer delay: 12 s (Range: 10 - 60, Default: 12)
- Off-hook for rejection: 1000 ms (Range: 500 - 5000, Default: 1000)
- On-hook protection time: 400 ms (Range: 100 - 5000, Default: 400)
- Polarity detection:
- Caller number sending mode: DISPLAY FROM

Below these is a section for 'Busy detection':

- Busy tone count: 3 Cycle (Range: 2 - 5)
- Tone-on duration: 350 ms (Range: 30 - 1000)
- Tone-off duration: 350 ms (Range: 30 - 2000)
- Detect dual-frequency busy tone:

A 'Save' button is located at the bottom right.

2.3 Configuring Load Balancing Mode

Step1 Click **Basic > SIP**.

Step2 Choose the High availability mode to **Load balancing**.

Step3 Fill primary SIP server IP address or domain name in **Registrar server**.

Step4 Click **Add** and fill the IP address for the standby SIP proxy server in **SIP server 1**. Repeat it for multiple SIP proxy servers.

Note: This step is required if an IP address is filled in step 3.

When a domain name is filled in step 3, you can also fill in a backup IP address in **SIP server 1**. This allows the device to failover to the backup IP address if the domain name resolution service fails.

Step5 Configure **OPTIONS** Settings and **REGISTER** Settings.

- **OPTIONS request period:** the interval between receiving the response (200) from the SIP server to the previous **OPTIONS** and sending the next **OPTIONS**.
- **OPTIONS request timeout:** the period since the sending of the last **OPTIONS** with no response by the SIP server.

- **REGISTER request timeout:** the period from the sending of the first REGISTER with no response by the previous SIP server to the sending of REGISTER to the next SIP server.

Step6 Click **Save**.

Figure 2-5 Load balancing configuration page

The screenshot shows the SIP configuration page with the following fields and sections:

- Basic** (selected): Line, Trunk, Routing, Advanced, Call Status, Logs, Tools
- Submenu: Status, Network, VLAN, System, SIP, MGCP, FoIP
- Local signaling port: 5060 (Range: 1 - 9999, Default: 5060)
- Increments of port number: 5
- Registrar server** (highlighted with a red box): [Empty field]
- Proxy server: localhost:5060 (e.g. 168.33.134.51:5000 or www.sipproxy.com:5000)
- Subdomain name: [Empty field]
- Registrar mode: Per line
- User name: [Empty field]
- Registrar password: [Empty field]
- Registration expiration: 600 s
- High availability** section:
 - Mode** (highlighted with a red box): Load balancing
 - SIP proxy sever setting: Add
 - SIP server1: [Empty field] (e.g. 168.33.134.53:5000)
 - OPTIONS request period: 60 s (Range: 2 - 65535)
 - OPTIONS request timeout: 2000 ms (Range: 1000 - 32000), if the response to OPTIONS is timed out, switch to the standby server.
 - REGISTER request timeout (highlighted with a red box): 17000 ms (Range: 2000 - 32000), if the response to REGISTER is timed out, switch to the standby server.
- Save button

Step7 Click **Basic > Network**, make sure DNS server can be obtained automatically or has been specified manually. See Figure 2-2.

Note: This step is required if a domain name is filled in step 3.