4G LTE Module User Guide

Version 1.2

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Yeastar Information Technology Co. Ltd.

Contents

Introduction

Yeastar S-Series VoIP PBX supports 4G LTE module. This guide provides an overview of hardware and configuration information for the 4G LTE module.

4G LTE Module Features

- **4G Connection**

  Accessing Yeastar S-Series VoIP PBX via the 4G network and enjoy all the powerful features of S-Series VoIP PBX. It is suitable for temporary locations, mobile offices, and places where a fixed-line broadband is not available.

- **Voice over LTE**

  Place the phone call over LTE connection rather than the existing 2G/3G voice networks. With VoLTE, you can expect faster connection time, high-definition call quality. Improving call stability, voice quality, and message integrations, VoLTE offers great benefits to companies.

- **4G LTE Network Failover**

  Automatically reroute the S-Series PBX's internet usage to 4G LTE wireless network if the PBX's primary internet connection fails.

- **Short Message Service (SMS)**

  Supports SMS to Email and Email to SMS features.

4G LTE Module Frequency Bands

Yeastar 4G module supports 3G and 4G network. The Table 1 shows the operating regions and frequency bands for Yeastar 4G LTE modules.

Table 1 4G LTE Module Frequency Bands

Yeastar 4G Module	Operating Region	3G	4G
EC25-E	Europe	WCDMA: B1/B5/B8	LTE FDD: B1/B3/B5/B7/B8/B20 LTE TDD: B38/B40/B41
EC25-A	North America	WCDMA: B2/B4/B5	LTE FDD: B2/B4/B12
EC25-AU	Australia	WCDMA: B1/B2/B5/B8	LTE FDD: B1/B3/B5/B7/B8/B28 LTE TDD: B40
EC25-J	Japan	WCDMA: B1/B6/B8/B19	LTE FDD: B1/B3/B8/B18/B19/B26 LTE TDD: B41
EC20	China and India	WCDMA: B1/B8	FDD LTE: B1/B3/B8 TDD LTE: B38/B39/B40/B41

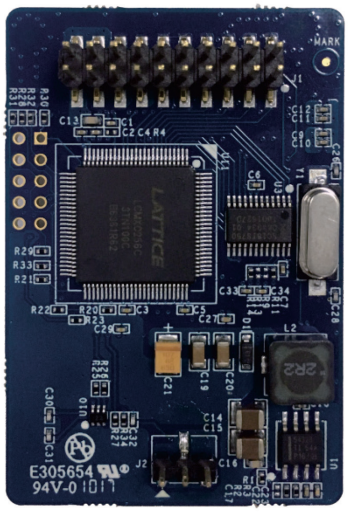
For more details about the operating regions and carriers, please refer to this document.

Installation

Hardware Overview

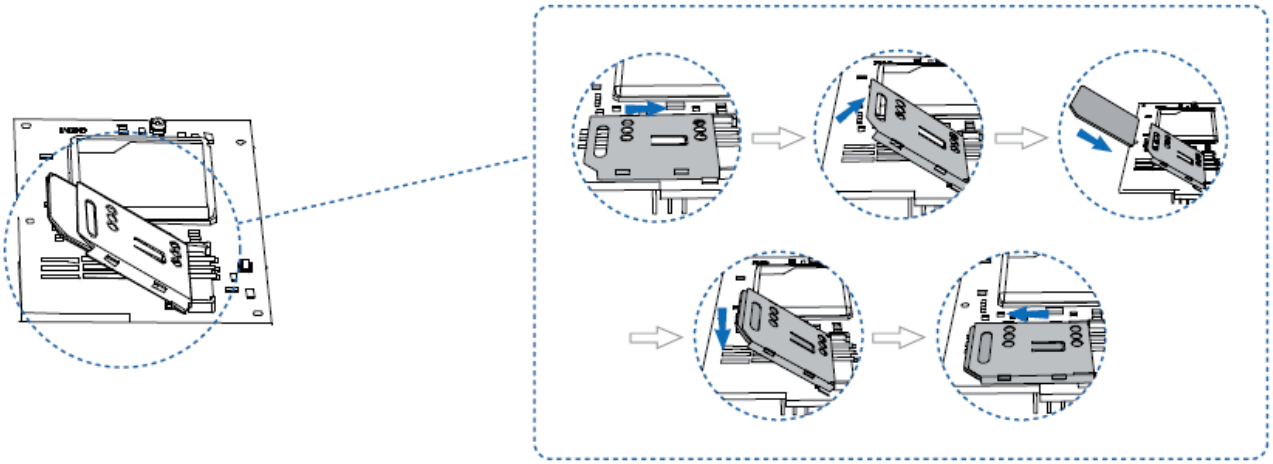
Front View

Back View



Installing the SIM Card

Note: if the 4G LTE module is installed on the PBX, you need to power off the PBX before you start to install or remove the SIM card.



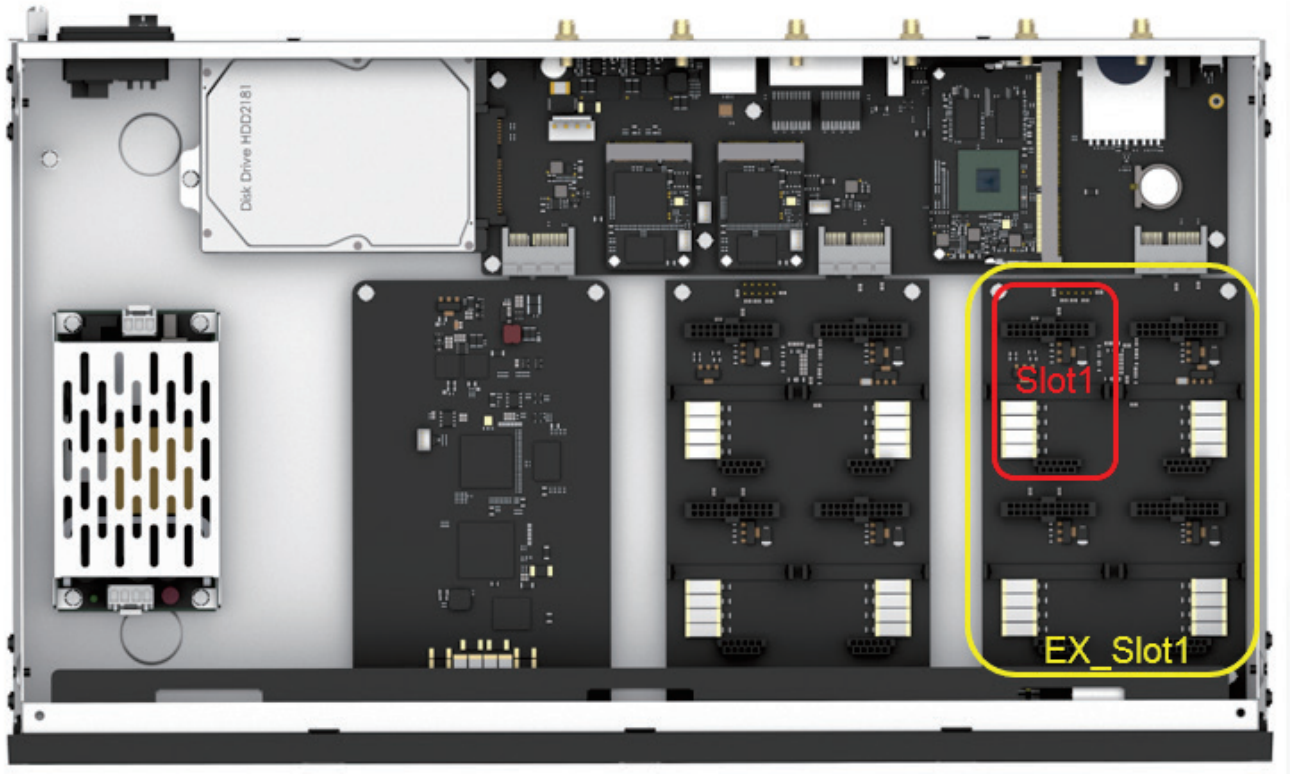
1. Unlock the SIM card slot.
2. Insert the SIM card to the slot.
3. Lock the SIM card slot.

Installing the 4G LTE Module

Important:

- Please first power down the PBX, then install the 4G LTE module.
- For S20/S50, you need to install the 4G LTE module into Slot1 if you want to use 4G cellular network.
- For S100/S300, you need to install the 4G LTE module into the first Expansion board Slot1 if you want to use 4G cellular network.
- The RF cable needs to be installed on MAIN 1 of the 4G LTE module.
- The 4G LTE module can be used with one RF cable and one antenna. To strengthen signal, 2 RF cables can be installed but 2 antenna ports will also be occupied with the exception of S20.

1. Power off the PBX.
2. Open the upper case of the PBX.
3. Place the module above the mainboard, slowly insert each pin into right slot.
4. Insert the RF cable and the antenna.



Configuring Cellular Network

After installing the 4G LTE module on Yeastar S-Series VoIP PBX, the PBX will automatically identify the SIM card carrier and use 4G network as the preferred cellular network.

Verifying Signal Strength and Network Status

Step 1. Log in your PBX web user interface, go to "**PBX Monitor**" to check the 4G signal and service availability. Hover over the trunk status, you can see the trunk details.

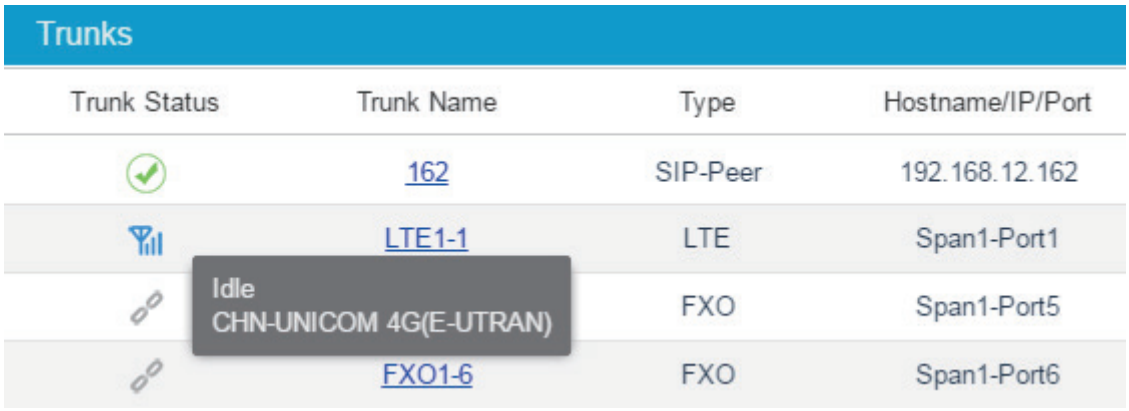
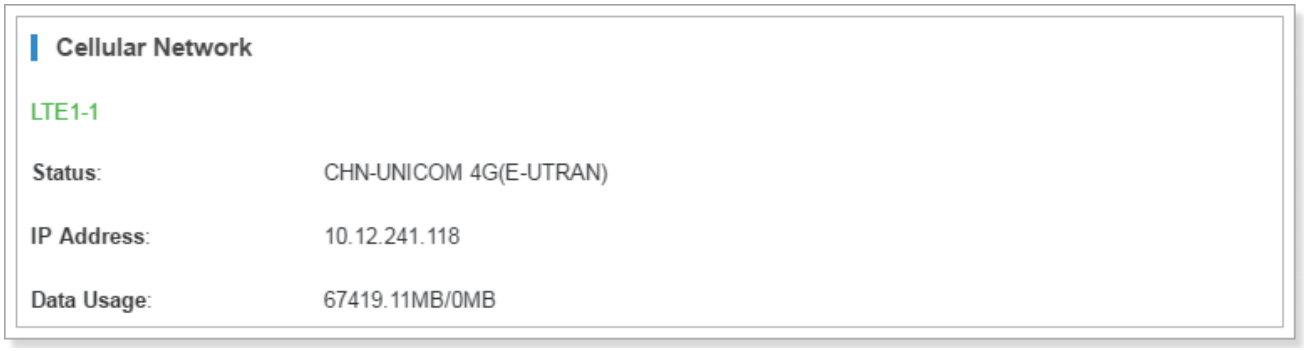


Table 2 4G Trunk Status Description

4G Trunk Status	
	The trunk is idle, the icon shows the signal strength.
	The trunk is busy.
	The module is powered off.
	No SIM card inserted.
	No signal.
	PIN/PUK Error.
	Cellular network registration failed.
	Malfunction in module; please examine the relevant module.

Step 2. Navigate to "**Resource Monitor > Network**", check the current network and cellular network. The PBX uses wired network as the default network, you can change network type to cellular

network via "**Settings > System > Network**".



Changing 4G LTE Network

Changing 4G Network Type

Navigate to "**Settings > PBX > Trunks**", edit your 4G LTE trunk, click "**Advanced**" tab, change the network type according to your network circumstance. For example, if the 3G network is better than 4G in your place, then choose 3G.

- **4G (FDD,TDD)**: use 4G network only.
- **3G (WCDMA)**: use 3G network only.

Configuring LTE Dial-up

The Dial-up settings contain the dial up connection parameters. The SIM card will establish Internet

communication with the CARRIER via the dial up connection parameters. **By default, you don't need to configure the dial-up settings.** Yeastar S-Series VoIP PBX can identify the SIM card and dial up to connect to the Internet.

Generally, you need to configure Dial-up settings for the following situations:

- The SIM card is installed in a place where the carrier network is not covered.
  First contact the carrier if the SIM card could connect to a non-local network, if the answer is yes, then ask the dial-up connection parameters from the carrier.

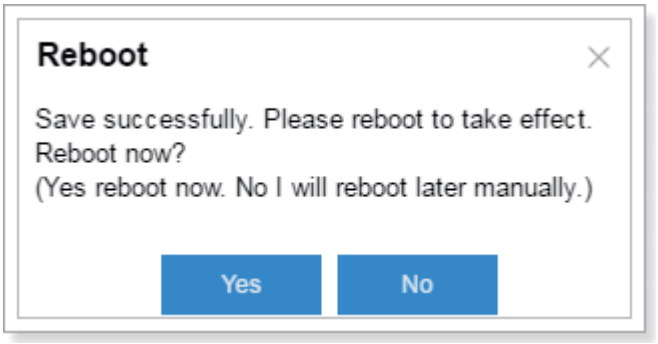
- The SIM card carrier asks you to change dial-up settings, so that you can connect to a specific network or another carrier network.

Note: please configure the dial-up settings under the guidance of your carrier, or the cellular network will fail.

To configure Dial-up Settings:

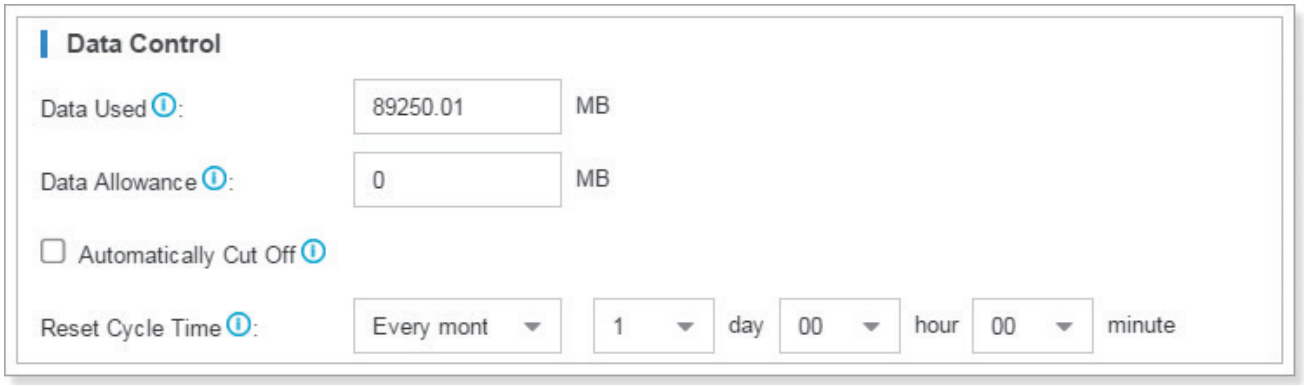
1. Log in S-Series Web user interface, navigate to "**Settings > System > Network > Cellular Network**".
2. Enter the parameters provided by the carrier, click "**Save**".

3. Click "**Yes**" to reboot the PBX, then the dial up settings will take effect.



Managing Cellular Data

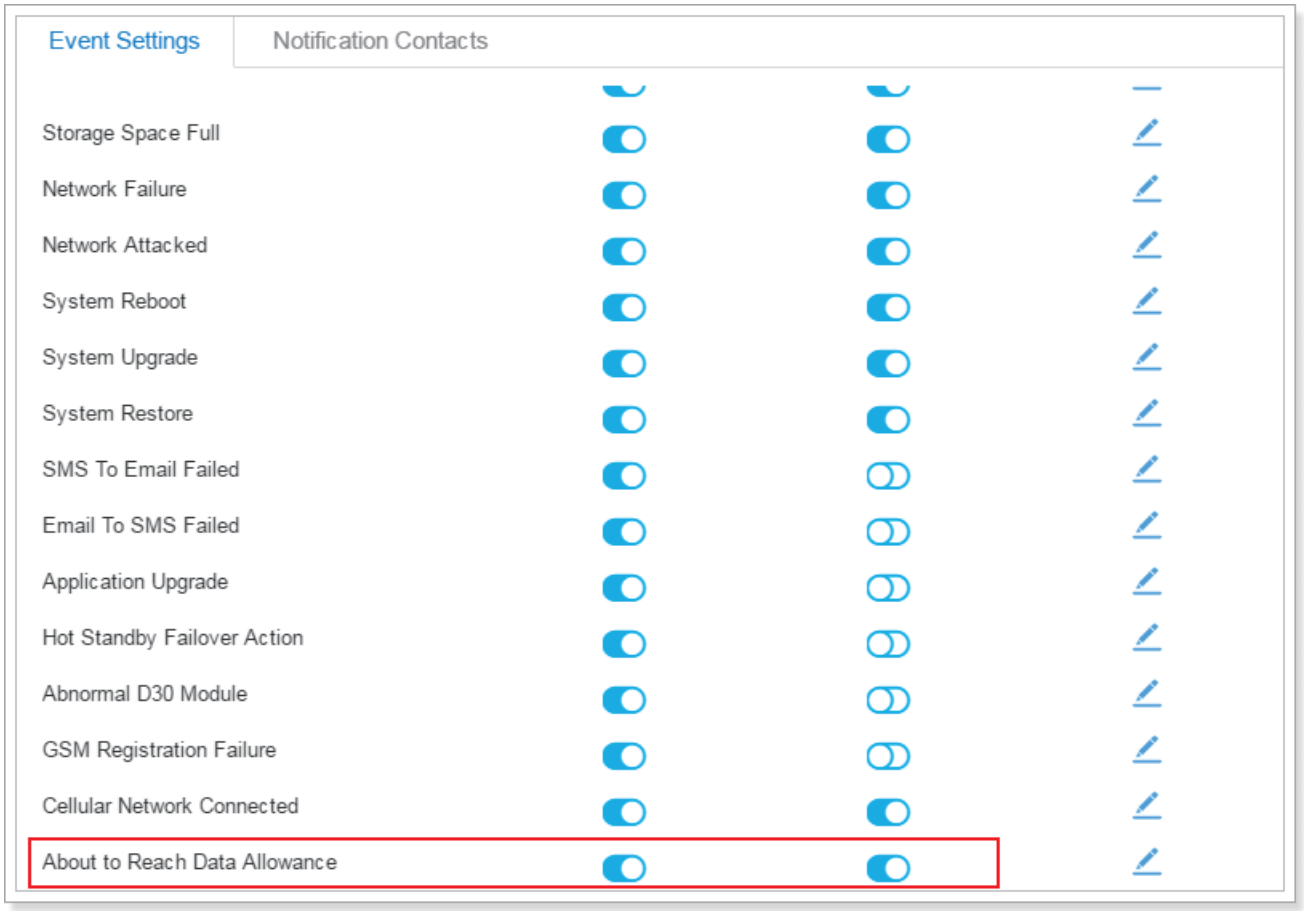
Step 1. Navigate to "**Settings > System > Network > Cellular Network**", and set Data Control settings to manage the cellular data.



Generally, the cellular data is paid by month. Below we give an example of how to manage cellular data by month. Assume that we have 2GB of cellular data allowance every month for the 4G card.

1) "**Data Used**" shows total used data on the PBX, you can change it to an actual value. If you set reset data monthly, then the "Data Used" shows monthly used data.
2) Set "**Data Allowance**" to 2048 MB (2*1024).
3) If "**Automatically Cut Off**" is enabled, when data usage exceeds 2GB, the PBX will disconnect cellular network.
4) Set "**Reset Cycle Time**", here we will reset the data monthly, choose "Every Month", and set the time, the data will reset to zero at the time every month.
5) Click "**Save**" and "**Apply**".

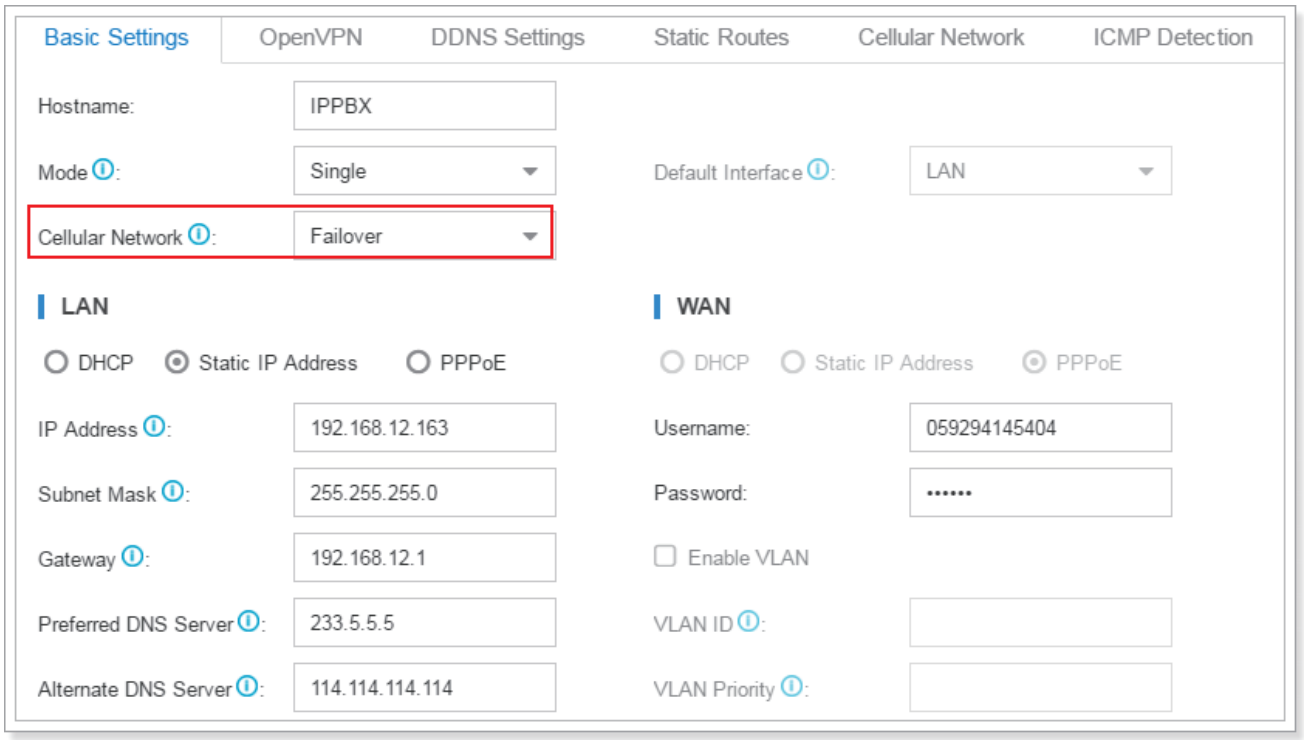
Step 2. Navigate to "**Settings > Event Center > Event Settings**", enable "**About to Reach Data Allowance**" event, and set the notification contact. When the data usage reaches 90% of the allowance data, the system will send alert SMS/Email/Call to the notification contacts.



Changing PBX's Network

By default, the PBX uses wired network, and cellular network is disabled. You can go to "**Settings > System > Network**", change the Cellular Network:

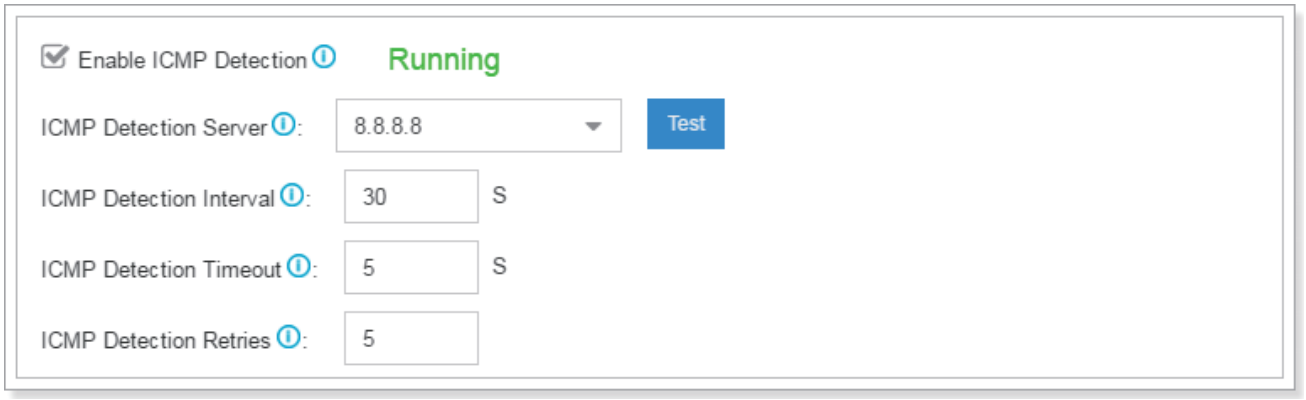
- **Never:** never use cellular network on the PBX.
- **Failover:** wired network is the preferred network, cellular network is the alternate network.
  Note: if you choose "Failover", you need to enable ICMP detection and configure DNS server for wired network.
- **Always: use cellular network only for the Internet connection.**
  Note: if you choose "Always", you need to configure DNS server for wired network.



ICMP Detection

ICMP detection is used to check if the current connectivity is active. If you choose cellular network as a failover network, you need to enable ICMP detection.

1. Check the checkbox for "**Enable ICMP Detection**".
2. Select a detection server from the drop-down menu, or you can enter a server in the textbox directly. Click "**Test**" to test if the PBX could access the detection server.
3. Set detection interval, timeout and retries.
4. Click "**Save**" and "**Apply**".

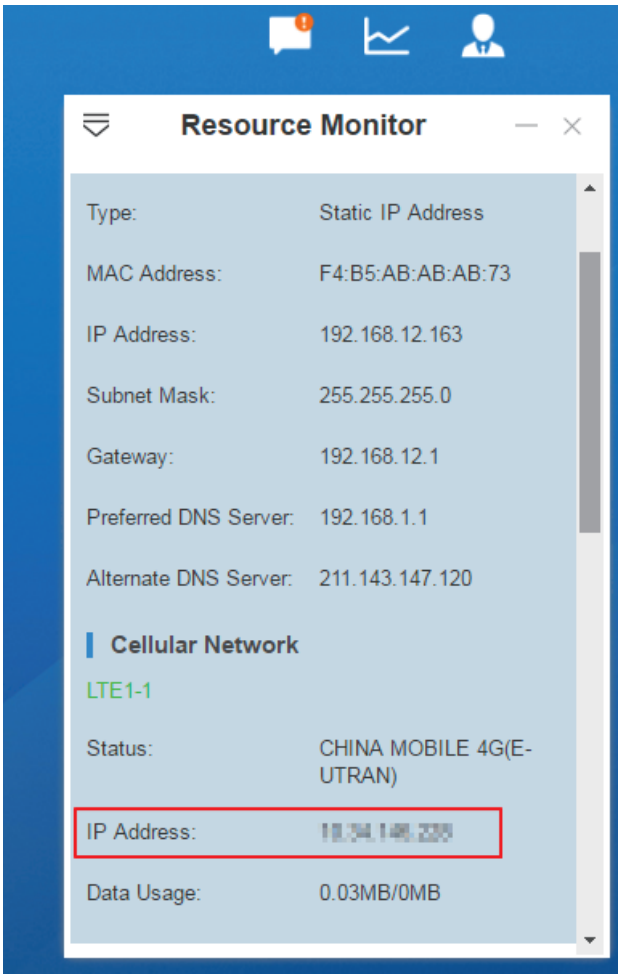


Accessing PBX via Cellular Network

Note:

- To access PBX via cellular network, first ensure that your cellular network is a public IP address. You cannot access PBX via a private cellular network.

1. Log in the PBX Web user interface, click "**Resource Monitor**" button at the top-right corner, and scroll down to check the IP address of cellular network.



2. Navigate to "**PBX > System > Network > Basic Settings**", set "**Cellular Network**" as "Always".
3. Enter the cellular IP address in your browser address bar, press "Enter" key to access the PBX.

Registering Remote Extensions/Trunks via Cellular Network

For Public Cellular Network

If you have a public cellular network, you can do the following via the cellular network:

- Register a remote extension
- Create a register-based VoIP trunk on other device to connect to S-Series PBX

- Create a or peer-to-peer VoIP trunk on other device to connect to S-Series PBX

Note: if you set the “Cellular Network” to “Always”, you can register remote extensions/trunks using the public IP address; if you set “Cellular Network” to “Failover”, you need to set DDNS on S-Series PBX first, and use the domain to register remote extensions/trunks.

For Private Cellular Network

The private IP is unreachable from Internet, so you cannot register remote extensions and peer-to-peer VoIP trunk to the PBX via private cellular network.

The private cellular network can access the Internet, so you can create a register-based VoIP trunk on S-Series PBX.

Setting Up VoLTE Calls

1. Contact the carrier to enable VoLTE service for your SIM card.
2. Edit your 4G LTE trunk, set the “**Network Type**” as “4G (FDD,TDD)”.
3. Enable “**VoLTE**” for the 4G LTE trunk.

4. Click “**Save**”.
5. Reboot the device to take effect.

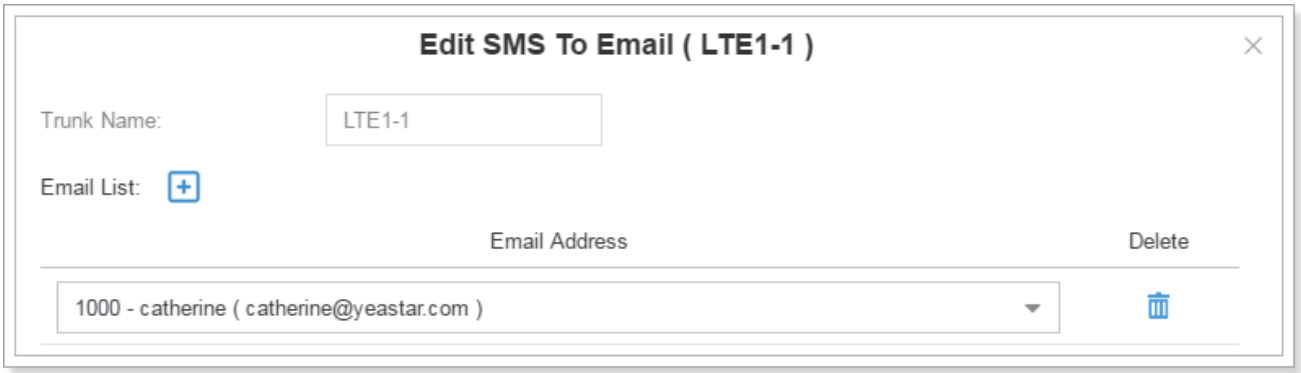
Short Message Service (SMS)

4G LTE module supports **SMS to Email** and **Email to SMS** features. To use these two features, you must do the following:

- Install **4G module** on the device.
- Insert **SIM card** on the 4G module.
- Check the **trunk status** and make sure that the 4G trunk is ready to be used.
- Set an email address for the system (Settings > System > Email).

Sending SMS to Email

1. Go to "**Settings > PBX > Call Features > SMS > SMS to Email**".
2. Choose a 4G LTE trunk and click .
3. Click to add email address.
4. Click "**Save**" and "**Apply**".
5. When you send a SMS from your mobile to the 4G trunk number, the SMS message will be delivered to the email address.



Sending Email to SMS

Send an email to the Yeastar system's email address with the specific email subject, the system will then receive the email and forward the email to your expected destination.

Sending Email to SMS, the Email subject format is as below:
port:[port];num:[number];code:[code];

Note: for S100 and S300, you need point the 4G port is on which expansion board. For example, "port:1_1", means Expansion board 1 port 1.

1) Send Email to SMS without Access Code through a Specific 4G Port
   Email Subject: port:[port];num:[number];

2) Send Email to SMS with Access Code through a Specific 4G Port
   Email Subject: port:[port];num:[number];code:[code];

Note: if you set Access Code on the "Email to SMS" web interface, you need to enter the code in your email subject.