

Configuring the Yeastar TG200 Device for TopView[®] Voice Notification

Updated July 8, 2021



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Recent updates:

- July 8, 2021
 - Blacklist information and firewall rule to allow local IPs
 - Updated recommended codecs
- June 21, 2021
 - Redundancy information added for single TG device or multiple TG devices
- June 17, 2021
 - First release of document

Contents

What is the Yeastar TG Series?	4
Yeastar TG200 User manual.....	4
TG 200/400/800/1600	4
Get the 4G/LTE device	5
SIM Card.....	5
Initial connection	6
Using this document	7
Icons.....	7
Warning: Apply button	7
Change the IP address of the TG200.....	8
Add firewall rule for TopView machine	9
Date and Time.....	11
Firmware	12
Insert SIM card into slot 1.....	13
Enable VoLTE (optional).....	13
Make sure that Trunk1 SIM is enabled for outgoing calls	13
Mobile Trunk(s) for cellular	14
Multiple SIM cards	14
Account/VOIP Trunk	15
Route (IP to Mobile).....	16
Make a test call from TopView	17
REBOOT	17
Yeastar TG200 Redundancy	18
Single device redundancy	18
Multiple device redundancy	19
Technical topics – TG Series.....	21
Unable to connect after previous successful connection.....	21
Increase the call volume	21
Call Connected state	22
Automatic, periodic reboots	22
Manual reboot of one SIM/cellular radio	22
DTMF detection	23

Cellular signal	23
DTMF mode.....	23
Turn off keypress sounds – Mobile device	23
Turn on/off VoLTE on mobile phone	23
Try a specific VOIP Codec.....	24
Yearstar DMTF resources.....	24

What is the Yeastar TG Series?

The Yearstar TG Series is a VOIP GSM Gateway capable of making cellular phone calls and sending/receiving SMS/text messages. The device includes a VOIP/SIP Server to allow VOIP/SIP clients (like TopView) to make phone calls over a cellular network.

The TG device has one or more cellular radios, each one tied to a SIM card slot on the device. Once an active GSM SIM card is inserted into a SIM card slot, the user can configure the device to allow TopView users to make phone calls from TopView over a cellular network.

We are currently working on implementing the Yeastar SMS API which will allow TopView to also use this device for sending/receiving SMS/text messages. This will be available in a future release of TopView.

Yeastar TG200 User manual

https://www.yeastar.com/download/Yeastar_TG_Series_User_Manual_en.pdf

TG 200/400/800/1600

The TG series devices can support from 2 to 16 SIM cards. The features of the devices are the same. This document refers to the TG200 device which is the one used for testing.

We do not recommend and have not tested the TG100 device because it does not support 4G LTE.

Get the 4G/LTE device

The TG200 device has a few models. Older models may not work with the latest 4G LTE carriers. There is a module/radio in the device that will tell you what is supported (2G/3G/4G) but unfortunately this information is only available through a terminal session to the device (Yeastar support can assist).

The 4G/LTE device is officially model “TG200L” and the description should state that it supports 3G/4G/LTE. If the description does not say “supports LTE” then you should assume that it does not.

Where to buy (last updated June 2021)

- Streakwave
[Yeastar TG400L TG-Series 4G-LTE Gateway 4 Channels \(streakwave.com\)](http://streakwave.com)
 - Contact: Steve Turner | Business Development Manager – Voice and Video Solutions
steve.turner@streakwave.com
TF: 888.604.5234 | P: 408.213.7308
- Neobits
https://www.neobits.com/yeastar_tg200l_yeastar_tg200l_tg_series_4g_lte_p14654652.html
- VOIP Supply
<https://www.voipsupply.com>
 - Contact: Mary Cheney
mcheney@voipsupply.com
(+1) 716-531-4329

Yeastar Sales Manager for NA

- Ivy Peng | Sales Account Manager
Xiamen Yeastar Information Technology Co., Ltd.
Website: www.yeastar.com
Email: ivy@yeastar.com Skype ID: +86 18030244635
Tel: +1 972-725-7999 US Support: 972-914-4899

SIM Card

This is a GSM device and requires a GSM SIM card with cellular calling enabled on the cellular account. In the United States this includes AT&T and T-Mobile plus resellers of AT&T and T-Mobile.

We’ve successful used SIMs from both AT&T and T-Mobile resellers but we recommend using a SIM from the primary GSM carriers.

Initial connection

The default IP address of the TG200 is 192.169.5.150.

If you connect your computer/laptop ethernet cable to the device, you should be able to connect to the device if you configure your network adapter IP address as 192.169.5.100 /255.255.255.0

- Power up the TG200 device
- Connect a network cable from laptop/computer directly to the TG200
- Device IP is 192.169.5.150
 - Set laptop to 192.168.5.100, 255.255.255.0
 - CMD: ping 192.168.5.150 (success)
- Log in with user=admin, pw=password

Using this document

Icons

This manual refers to locations in the Web UI as

X > Y > Z

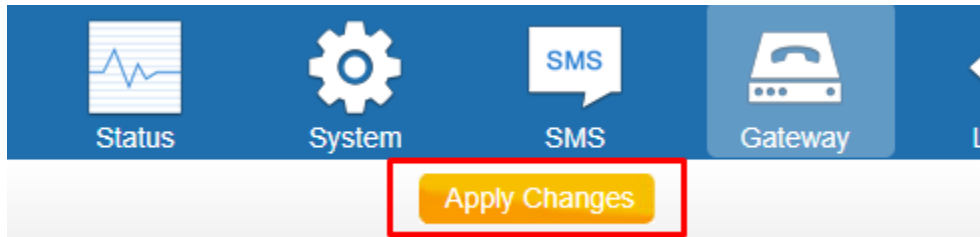
where X is the name of one of the icons in the upper right of the Web UI



Warning: Apply button

As you make changes in the Web UI you will frequently see a [Save] button. This saves your settings but does not apply these changes to the device until you click [Apply settings] at the top of the web page.

Remember to look for the Apply Changes button after settings are saved.



Change the IP address of the TG200

- Our test network is 192.168.1.X with Gateway/DNS as 192.168.1.1
 - We set the IP address of the TG 200 to 192.168.1.238
- **System > Network Preferences > Network settings**
 - Leave as “Static IP Address”
 - Enter your static IP address for the device
 - Enter gateway and DNS Server for your network

Network Settings

Hostname:

▶ LAN

DHCP Static IP Address PPPoE

IP Address ⓘ :

Subnet Mask ⓘ :

Gateway ⓘ :

Preferred DNS Server ⓘ :

Alternate DNS Server ⓘ :

IP Address2 ⓘ :

Subnet Mask2 ⓘ :

Enable VLAN1 ⓘ

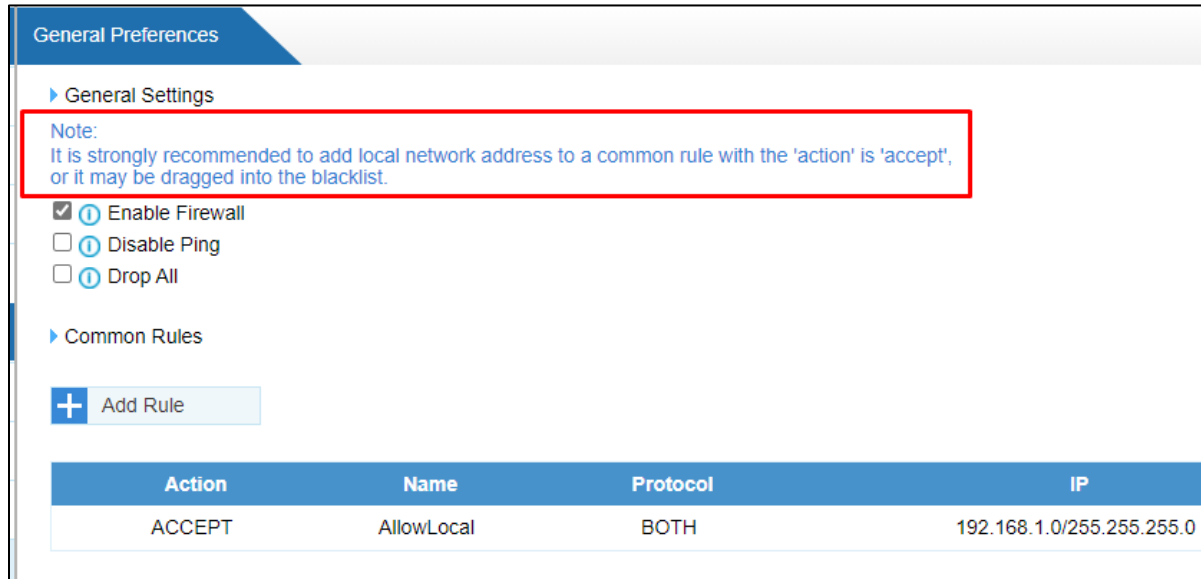
Enable VLAN2 ⓘ

- Save (Device prompts to reboot)
- Plug the TG200 into your company switch/LAN
- Put your computer back on the company LAN
- You should be able to log into the device using the static IP address assigned

Add firewall rule for TopView machine

The TopView machine may frequently connect to the TG200 device. The TG200 firewall may add the TopView machine to a blacklist due to these connection attempts. Therefore, you should add a firewall rule to always allow connections from TopView.

System > Security Center > Firewall Rules



General Preferences

▶ General Settings

Note:
It is strongly recommended to add local network address to a common rule with the 'action' is 'accept', or it may be dragged into the blacklist.

Enable Firewall
 Disable Ping
 Drop All

▶ Common Rules

+ Add Rule

Action	Name	Protocol	IP
ACCEPT	AllowLocal	BOTH	192.168.1.0/255.255.255.0

If you suspect that the TopView machine has been blacklisted see “Unable to connect after previous successful connection”

Click [Add Rule] to add a new rule

- Enter a Name and Description
- Protocol: BOTH
- Port: 1 : 65535
- IP: allow access from all local IPs : A.B.C.0 / 255.255.255.0
 - Example: our TG200 IP address is 192.168.1.238 so we entered 192.168.1.0 / 255.255.255.0
- MAC Address: this field is optional, leave empty
- Action: Accept
- Save

The screenshot shows a window titled "Edit Firewall Rule" with a close button (X) in the top right corner. The form contains the following fields and values:

- Name: AllowLocal
- Description: Allow local IP addresses
- Protocol: BOTH
- Port: 1 : 65535
- IP: 192.168.1.0 / 255.255.255.0
- MAC Address: (empty)
- Action: Accept

At the bottom of the form, there are two buttons: "Save" and "Cancel".

Date and Time

System > System Preferences > Date and time

- Set time zone
- Set daylight savings time: Automatic
- Enable automatic time sync
 - This requires that you set the correct DNS/Gateway in the network settings
- Save/Apply Changes/[Reboot Now]

General Settings

Server Time: Mon May 17 11:45:55 2021

Time Zone:

Daylight Saving Time:

Automatically Synchronize With An Internet Time Server

NTP Server:

Set Date & Time Manually

Date:

Time: : AM

Firmware

Check current firmware version

Status > System Status > System Info

- Check the latest version of the firmware
<https://www.yeostar.com/firmware-download/>
- Right-click the BIN button and copy the address

Update firmware:

- **System > System Preferences > Firmware update**
- Select HTTP
- Paste the url to the BIN
 - You may need to remove HTTPS:// from the url
Example:
 - Was: **https://**image.yeostar.com/Yeostardownload/91.3.0.21.bin
 - Entered: image.yeostar.com/Yeostardownload/91.3.0.21.bin
- Upgrade the firmware


You can also upgrade the firmware via TFTP. Additional information on upgrading through TFTP is available from Yeostar support:

<https://support.yeostar.com/hc/en-us/articles/217745237-How-to-Do-Firmware-Update>

Insert SIM card into slot 1

The red light next to the SIM slot will be solid once it has registered the SIM with the cellular carrier.

- **Status > System Status > Trunk Status**
- Verify signal and carrier

Trunk Status			
Port	Trunk Name	Status	Carrier
1	<u>Trunk1</u>		T-Mobile USA

- Verify that the connection is 4G/LTE
 - Hover your mouse over “Trunk1” to see details

<u>Trunk1</u>	Module Type:LTE	Network Type:4G(E-UTRAN)
<u>Trunk2</u>	IMEI:866182040210830813	IMSI:310618007061875
	Carrier:GSMA	Signal:-51dBm 31asu Location:LAC=d08
	CID={41771}	

- If the connection is not 4G/LTE, the call quality may not be as good and you may lose support for the SIM if/when the carrier no longer supports 2G/3G
- If a PIN required for the SIM
 - Click Trunk1
 - **Advanced settings > Pin code**
- Note: “Trunk1” is the name of VOIP Trunk for the first SIM card slot.

Enable VoLTE (optional)

Voice calls on your mobile phone can use a traditional voice network or the cellular carrier’s LTE network (Voice over LTE). VoLTE will provide superior call quality as long as your LTE signal is strong.

Gateway > Mobile list > Mobile list

Click the edit pencil  for Trunk1

- **Advanced settings > Enable VoLTE**

Make sure that Trunk1 SIM is enabled for outgoing calls

Gateway > Mobile list > Mobile list

Port	Trunk Name	Type	Talk Time(min)	Used(min)	Available(min)	Outbound
1	Trunk1	Mobile	Unlimited	5	Unlimited	<input checked="" type="checkbox"/>
2	Trunk2	Mobile	Unlimited	0	Unlimited	<input checked="" type="checkbox"/>

Mobile Trunk(s) for cellular

Gateway > Mobile list > Mobile list

A Mobile Trunk is a single SIM trunk (SIM1 or SIM2).

If you only have a single SIM card, only a single outgoing call can occur at a time.

Multiple SIM cards

If you have multiple SIM cards in the TG200, you can create a Mobile Group – a single name that represents multiple SIMS. Outgoing calls from TopView can then use the first available SIM when attempting to make a call.

Gateway > Mobile List > Mobile Group

Create a single name and add both Trunk1 and Trunk 2

Edit Mobile Group X

Group Name ⓘ :

Strategy ⓘ :

Group Members

Available Mobile		Selected
<div style="border: 1px solid #ccc; height: 100px;"></div>	<div style="display: flex; flex-direction: column; align-items: center;"><div style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;">»»</div><div style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;">→</div><div style="border: 1px solid #ccc; padding: 2px 10px; margin-bottom: 5px;">←</div><div style="border: 1px solid #ccc; padding: 2px 10px;">««</div></div>	<div style="border: 1px solid #ccc; padding: 5px;"><p>Trunk1</p><p>Trunk2</p></div>

Account/VOIP Trunk

An account is a SIP extension that can be used by TopView to connect to the TG200 to make outgoing calls.

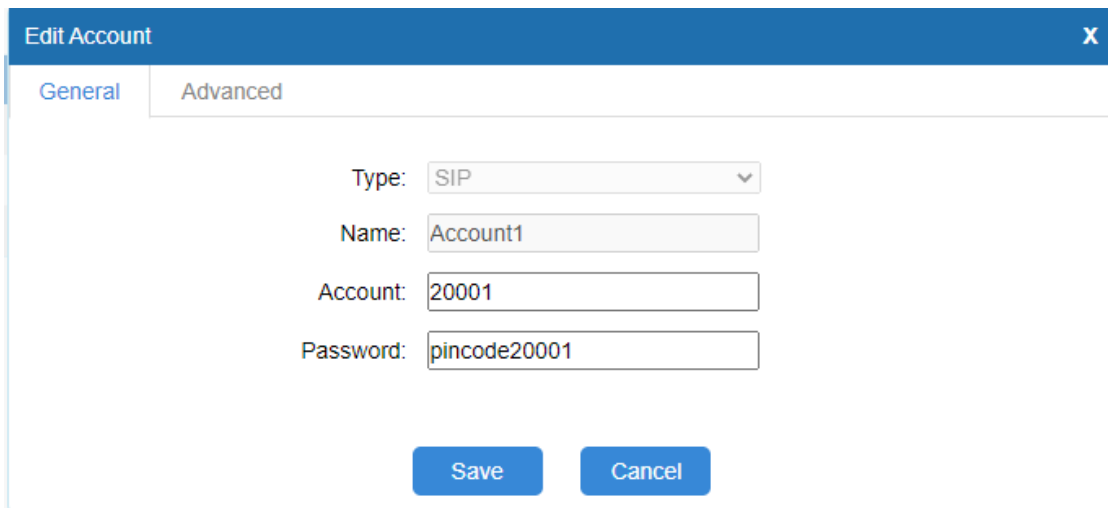
In the TG200 they call these extensions “VOIP Trunks” of type “Account”

Gateway > VOIP settings > VOIP Trunk

The TG200 has 2 default accounts named Account1 and Account2

You can use either of these accounts/extensions from TopView or you can create a new account/extension.

Here are the details of the default Account1

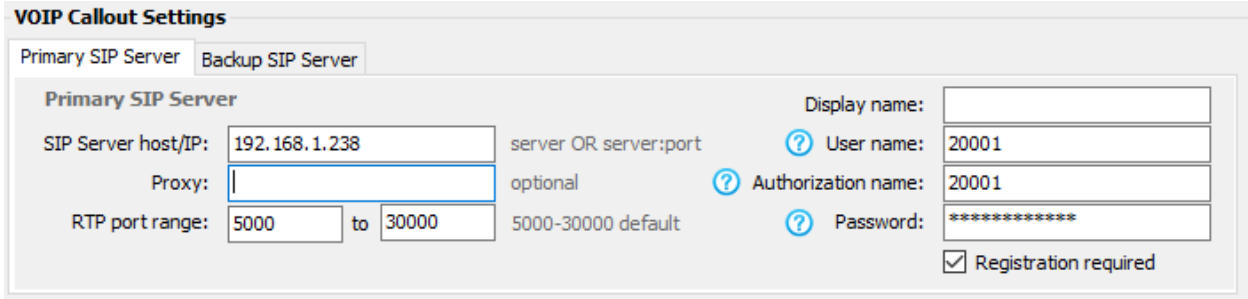


Dialog box titled "Edit Account" with a close button (X). The "General" tab is selected. Fields include:

- Type: SIP
- Name: Account1
- Account: 20001
- Password: pincode20001

Buttons: Save, Cancel

In TopView you will use the listed account (20001 above) for the SIP user and auth name, and the password as the SIP password. Note: do not use “Account1” as the user or auth name in TopView.



VOIP Callout Settings

Primary SIP Server | Backup SIP Server

Primary SIP Server

SIP Server host/IP: 192.168.1.238 server OR server:port
Proxy: optional
RTP port range: 5000 to 30000 5000-30000 default

Display name:
User name: 20001
Authorization name: 20001
Password: *****
 Registration required

Route (IP to Mobile)

The route is used to route the account/extension (TopView via IP connection) to the SIM or SIMs to use for a phone call.

Gateway > Routes Settings > IP to Mobile

The route connects the IP client (TopView) to the cellular trunk for the SIM

A default route should exist to route Account1 to Trunk1 (SIM slot 1)

If you created a mobile group for multiple SIMs, you can assign the group to the route for Account1

Edit Route X

Simple Mode ⓘ : Yes ▼

Route Name ⓘ : default

Match Incoming Calls:

Call Source SIP Account -- Account1 ▼

Incoming Calls Processing:

Call Destination: Mobile -- Trunk1 ▼

Hotline: Mobile -- Trunk1
Mobile -- Trunk2
Mobile Group -- Trunk1And2

Save Cancel

Make a test call from TopView

Run the TopView Configurator. Select "Voice Notification" from the left menu then [Configure]

- SIP Server host/IP: the static IP address assigned to the TG200
- User name and Authorization name: the account/extension number
- Password: the account/extension password
- Registration required: Yes

VOIP Callout Settings

Primary SIP Server Backup SIP Server

Primary SIP Server

SIP Server host/IP:	<input type="text" value="192.168.1.238"/>	server OR server:port	Display name:	<input type="text"/>
Proxy:	<input type="text"/>	optional	User name:	<input type="text" value="20001"/>
RTP port range:	<input type="text" value="5000"/> to <input type="text" value="30000"/>	5000-30000 default	Authorization name:	<input type="text" value="20001"/>
			Password:	<input type="text" value="*****"/>
				<input checked="" type="checkbox"/> Registration required

REBOOT

We recommend rebooting the device once configured

- **System > System preferences > Reset and reboot**
- [Reboot] button

Yeastar TG200 Redundancy

TopView supports redundancy for VOIP/SIP allowing the user to specify a primary and failover SIP Server or extension.

Single device redundancy

Single device redundancy allows the user to configure a single TG200 device that will failover to a second SIM card if the primary SIM card is unable to make calls.

Example: cellular account for SIM1 is no longer active because the account was not renewed. TopView will make calls on SIM2 if calls on SIM1 fail.

Configure two accounts in the TG200, each one tied to a single SIM card.

- Gateway > Mobile List > Mobile List
 - Trunk for each SIM (e.g., Trunk1 and Trunk2)
- Gateway > VOIP Settings > VOIP Trunk
 - Two accounts/extensions (e.g., Account1/20001, Account2/20002)
- Gateway > Route Settings > IP to Mobile
 - Route each account/extension to a SIM
 - Account1/20001 route to Trunk1/SIM1
 - Account2/20002 route to Trunk2/SIM2

TopView Voice Notification redundancy configuration: use the same SIP Server but different accounts/extensions for Primary and Backup SIP Servers.

VOIP Callout Settings

Primary SIP Server Backup SIP Server

Primary SIP Server

SIP Server host/IP:	192.168.1.238	server OR server:port	Display name:	
Proxy:		optional	User name:	20001
RTP port range:	5000 to 30000	5000-30000 default	Authorization name:	20001
			Password:	****

Registration required

VOIP Callout Settings

Primary SIP Server Backup SIP Server

Backup SIP Server

SIP Server host/IP:	192.168.1.238	server OR server:port	Display name:	
Proxy:		optional	User name:	20002
RTP port range:	5000 to 30000	5000-30000 default	Authorization name:	20002
			Password:	*****

Registration required

Multiple device redundancy

Multiple device redundancy allows the user to configure two TG200 devices. TopView will failover to the second device if the primary device is unable to make calls.

Configure the two TG200 devices

- Single SIM
 - Gateway > Mobile List > Mobile List
 - Trunk for SIM1 (e.g., Trunk1)
- Multiple SIMs
 - Gateway > Mobile List > Mobile Group
 - Create a Mobile Group for the multiple SIMS
- Gateway > VOIP Settings > VOIP Trunk
 - One account/extension (e.g., Account1/20001)
- Gateway > Route Settings > IP to Mobile
 - Route each account/extension to a SIM/SIMs
 - Single SIM: Account1/20001 route to Trunk1/SIM1
 - Multiple SIMS: Account1/20001 route to the created Mobile Group (SIM1/SIM2)

TopView Voice Notification redundancy configuration should use the each TG200/SIP Server and the associated account/extension.

VOIP Callout Settings	
Primary SIP Server	Backup SIP Server
Primary SIP Server	Backup SIP Server
SIP Server host/IP: 192.168.1.238	SIP Server host/IP: 192.168.1.239
Proxy:	Proxy:
RTP port range: 5000 to 30000	RTP port range: 5000 to 30000
server OR server:port optional	server OR server:port optional
5000-30000 default	5000-30000 default
Display name:	Display name:
User name: 20001	User name: 20001
Authorization name: 20001	Authorization name: 20001
Password: *****	Password: *****
<input checked="" type="checkbox"/> Registration required	<input checked="" type="checkbox"/> Registration required

Technical topics – TG Series

Unable to connect after previous successful connection

Symptoms:

- You were previously able to connect to the TG200 device (SIP and/or Web UI) but can no longer connect
- Ping of the TG200 IP address fails

Assuming that the device is alive and on the network, your IP may have been blacklisted if you did not create a firewall rule to allow all connections from TopView.

Try to connect to the TG200 Web UI from another machine.

If you are able to log in from another machine:

- Check the blacklist for your IP address and delete the entry from the blacklist
System > Security Center > IP Blacklist
- Add a firewall rule to allow connections from TopView.
See “Add firewall rule for TopView machine”

Increase the call volume

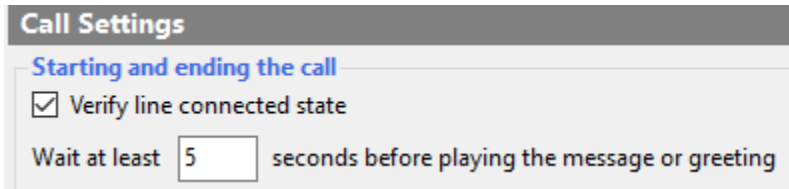
From the TG200 Web UI:

Gateway > Mobile List > Mobile List

- Click pencil icon for SIM Trunk
- Tx Volume: the transmitting volume of the module.

Call Connected state

TopView voice notification settings allow the TopView call to begin speaking once the call is connected.



The connected state of a call is typically achieved when the called person answers the call.

With the Yeastar TG series we've observed the following behavior:

- When calling a cellular phone, the connected state is achieved when the person answers the call
- When calling a non-cellular phone, the connected state is achieved once the phone starts ringing. Depending on the TopView setting "Wait at least X seconds before playing the message or greeting", the person may answer the phone and hear a message already in progress. The message can be configured to loop so the user will still be able to hear the message.

If your calls are not reaching the connected state, try to enable or disable VoLTE for the SIM/radio. See "Enable VoLTE (optional)"

Automatic, periodic reboots

The TG series device can be configured to automatically restart itself every day, week, or month.

Status > System Preferences > Reset and Reboot

Manual reboot of one SIM/cellular radio

You can reboot each SIM/cellular radio if you are having issues with a SIM or registration.

Gateway > Mobile List > Mobile List

Port	Trunk Name	Type	Talk Time(min)	Used(min)	Available(min)	Outbound	Reboot Module
1	Trunk1	Mobile	Unlimited	13	Unlimited	ON	Reboot
2	Trunk2	Mobile	Unlimited	14	Unlimited	ON	Reboot

DTMF detection

TopView supports access codes and alarm acknowledgement using the phone keypad. This key press sends a DTMF code back to TopView. The following section provides information to improve DTMF/tone detection.

Cellular signal

Ensure that you have a good cellular signal. A poor signal is more likely to have DTMF issues.

- **Status > System Status > Trunk status**
- See how many bars you have for “Status”



DTMF mode

The default DTMF mode is rfc2833 which is recommended for most users. But you can try the other options to see if you get better DTMF detection

- **Gateway > VOIP Settings > SIP Settings**
- DTMF mode. Default is rfc2833

Turn off keypress sounds – Mobile device

Some people report that keypress sounds on a mobile device may be picked up by the phone speaker and disrupt correct DTMF detection.

On most phones, go into the phone app settings and turn off audible keypress tones.

Turn on/off VoLTE on mobile phone

Voice calls on your mobile phone can use a traditional voice network or the cellular carrier’s LTE network (Voice over LTE). VoLTE will provide superior quality as long as your LTE signal is strong.

Try to turn VoLTE on or off on the mobile device to see if you have better DTMF tone detection. This may also be called “Advanced calling with LTE” within your phone’s settings.

Try a specific VOIP Codec

A VoIP codec is a technology that determines the audio quality, bandwidth, and compression of VOIP phone calls. Instead of using the default codecs you can force TopView and the Yeastar to use a specific codec.

Default Yeastar Codecs:

u-law
a-law
GSM

Users report the most success with the “u-Law”/PCMU/G.711” codec with the non-LTE version of the TG200.

Yeastar TG200:

- **Gateway > VOIP Settings > SIP Settings > Codecs**
- Allowed codecs: add u-law if it is not in the “Allowed Codecs” list
- Remove any other “Allowed Codecs”
- Save and Apply settings

TopView Configurator

- Voice notification settings > General
- Click [Set call codecs..]
- Select “Use custom codecs”
- Check the PCMU (G7.11) codec

Use custom codecs - checked codecs will be offered for use during voice notifications

Use codec	Display name	Name	Payload type	Channels	Sample rate	Description
<input checked="" type="checkbox"/>	PCMU (G.711)	PCMU	0	1	8000	ITU-T G.711 PCM μ
<input type="checkbox"/>	PCMA (G.711)	PCMA	8	1	8000	ITU-T G.711 PCM A
<input type="checkbox"/>	G.722	G722	9	1	8000	ITU-T G.722 audio t
<input type="checkbox"/>	G.723	G723	4	1	8000	Obsoleted codec su

Yearstar DMTF resources

<https://support.yeastar.com/hc/en-us/sections/360005913034-DTMF-Related-Issue>