

DMR – Teil 3 – Hotspot & Mumble

Treff.DARC 05.04.2022

Ein Vortrag von DF1HPK
om@df1hpk.de

DF1HPK

- Jahrgang 1987
- QRL: Softwareentwickler (Schwerpunkt Java)
- Funkamateurl
 - 2009 (Klasse E)
 - 2011 (Klasse A)
 - DOK C28
- <https://df1hpk.de>



Übersicht - Vortragsreihe

- **Teil 1 (08.03.) (Folien auf meiner Homepage)**
 - Was ist DMR (Technik, TS, TG, Private Call)
 - Wie werde ich QRV (Geräte, Codeplug Basics)
- **Teil 2 (22.03.)**
 - Betrieb (alltäglicher Betrieb, Funktionen im Netz, Codeplug)
- **Teil 3 (05.04.)**
 - **Hotspot (Einrichtung / Betrieb)**
 - **Mumble**

Übersicht – Teil 3

- Hotspot
 - Installation
 - Einrichten
 - Betrieb
- Mumble

Hotspot - Installation

- Simplex Hotspot (~40€ + RasPi)
- Duplex Hotspot (~60€ + RasPi)
- Pi-Star unterstützt
 - RaspberryPi / RaspberryPi Nano
 - Nano Pi Neo / Nano Pi Neo Air
 - Orange pi zero
 - Odroid XU 3 / Odroid XU 4

Hotspot - Installation

Passendes Image runterladen

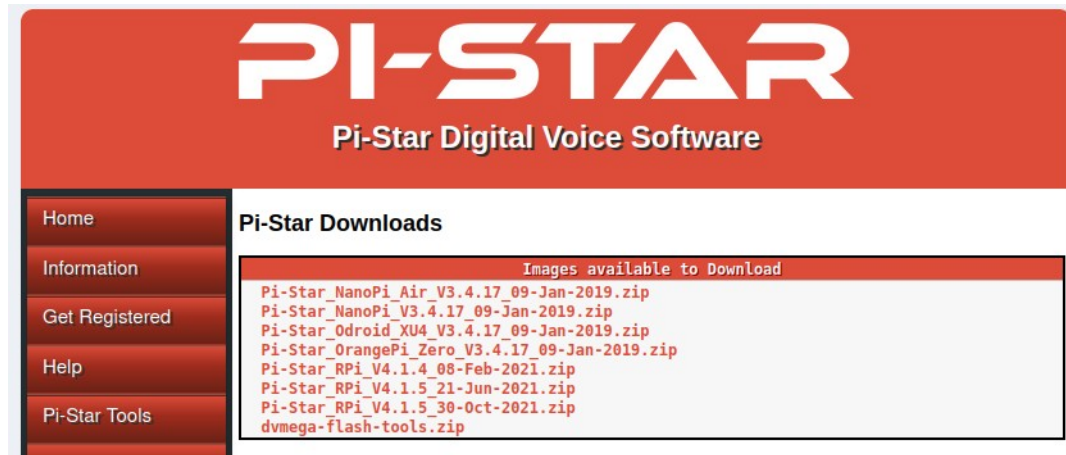
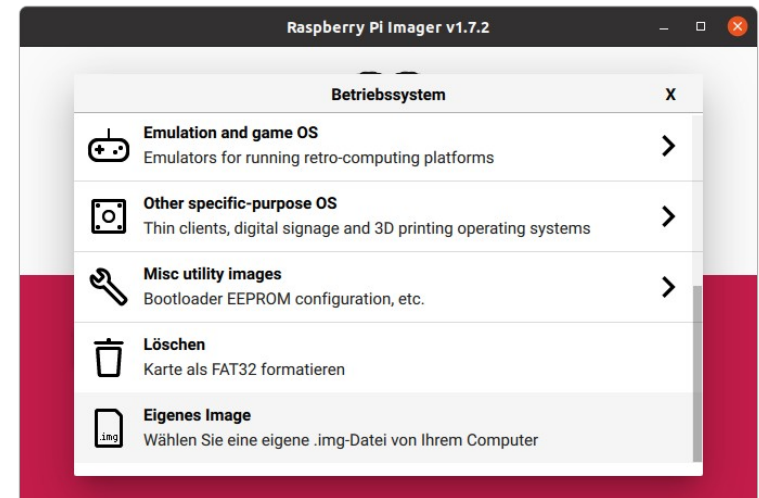
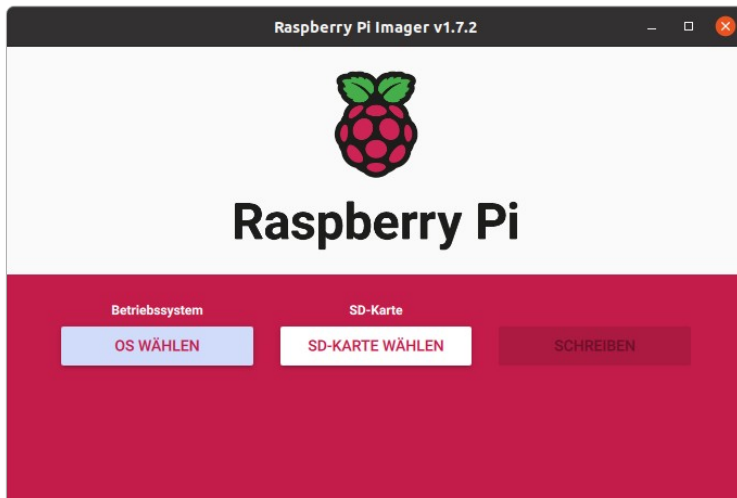


Image mit „Raspberry Pi Imager“ auf SD Karte kopieren



Hotspot - Installation

Ggf. den „Wifi Builder“ nutzen

The screenshot shows the Pi-Star WiFi Builder web interface. At the top, there is a red header with the text "PI-STAR" in large white letters and "Pi-Star Digital Voice Software" below it. On the left side, there is a vertical navigation menu with buttons for "Home", "Information", "Get Registered", "Help", "Pi-Star Tools", "Multi Reflector", "DMR Radio Tools", "BrandMeister Tools", and "DMR+ Tools". The main content area is titled "Pi-Star WiFi Builder" and contains the following text: "This tool is used to create your 'wpa_supplicant.conf' for use with Pi-Star. All you need to do is enter your SSID (this is the name of your Wireless Network) and the matching PSK (this is the Pre-Shared Key, or Password) for this network, when you hit 'Submit' the generated config file will download to your computer." Below this text, there are instructions for connecting to an open network and instructions for using the tool on a Pi-Star SD card. At the bottom of the main content area, there is a form with the following fields: "WiFi Country Code:" with a dropdown menu showing "DE", "SSID:" with an empty text input field, and "PSK:" with an empty text input field. A "Daten absenden" button is located at the bottom right of the form.



Hotspot - Einrichten

<http://pi-star/admin/>

Hardwareinformationen

MMDVM
Simplex / Duplex

Generelle
Einstellungen

Pi-Star 4.1.5 / Dashboard: 20211021

Pi-Star Digital Voice - Configuration

Dashboard | Admin | Expert | Power | Update | Backup/Restore | Factory Reset

Gateway Hardware Information

Hostname	Kernel	Platform	CPU Load	CPU Temp
pi-star	5.10.63+	Raspberry Pi Zero W Rev 1.1	3.62 / 1.55 / 0.58	41.2°C / 106.2°F

Control Software

Setting	Value
Controller Software:	<input type="radio"/> DStarRepeater <input checked="" type="radio"/> MMDVMHost (DV-Mega Minimum Firmware 3.07 Required)
Controller Mode:	<input checked="" type="radio"/> Simplex Node <input type="radio"/> Duplex Repeater (or Half-Duplex on Hotspots)

[Apply Changes](#)

General Configuration

Setting	Value
Hostname:	pi-star Do not add suffixes such as .local
Node Callsign:	M1ABC
Radio Frequency:	438.800.000 MHz
Latitude:	50.00 degrees (positive value for North, negative for South)
Longitude:	-3.00 degrees (positive value for East, negative for West)
Town:	Town, L0C4T0R
Country:	Country
URL:	<input type="text" value="http://www.mw0mwz.co.uk/pi-star/"/> <input type="radio"/> Auto <input checked="" type="radio"/> Manual
Node Type:	<input checked="" type="radio"/> Private <input type="radio"/> Public
APRS Host Enable:	<input type="checkbox"/>
APRS Host:	euro.aprs2.net
System Time Zone:	Europe/London
Dashboard Language:	english_uk

[Apply Changes](#)

Firewall Configuration

Setting	Value
Dashboard Access:	<input checked="" type="radio"/> Private <input type="radio"/> Public
ircDDBGateway Remote:	<input checked="" type="radio"/> Private <input type="radio"/> Public
SSH Access:	<input checked="" type="radio"/> Private <input type="radio"/> Public
Auto AP:	<input checked="" type="radio"/> On <input type="radio"/> Off Note: Reboot Required if changed
uPNP:	<input checked="" type="radio"/> On <input type="radio"/> Off

[Apply Changes](#)

Ein Vortrag von DF1HPK
om@df1hpk.de

Hotspot - Einrichten

General Configuration	
Setting	Value
Hostname:	pi-star <small>Do not add suffixes such as .local</small>
Node Callsign:	DF1HPK
Radio Frequency:	433.700 MHz
Latitude:	48.16 <small>degrees (positive value for North, negative for South)</small>
Longitude:	11.44 <small>degrees (positive value for East, negative for West)</small>
Town:	Munich, JN58RD
Country:	Germany
URL:	https://df1hpk.de <input type="radio"/> Auto <input checked="" type="radio"/> Manual
Node Type:	<input checked="" type="radio"/> Private <input type="radio"/> Public
APRS Host Enable:	<input type="checkbox"/>
APRS Host:	euro.aprs2.net ▾
System Time Zone:	Europe/Berlin ▾
Dashboard Language:	english_uk ▾

Hotspot - Einrichten

General Configuration

Setting	Value
Hostname:	pi-star <small>Do not add suffixes such as .local</small>
Node Callsign:	DF1HPK
Radio Frequency:	433.700.000 MHz
Latitude:	48.16 <small>degrees (positive value for North, negative for South)</small>
Longitude:	11.44 <small>degrees (positive value for East, negative for West)</small>
Town:	Munich, JN58RD
Country:	Germany
URL:	https://df1hpk.de <input type="radio"/> Auto <input checked="" type="radio"/> Manual
Radio/Modem Type:	DV-Mega Raspberry Pi Hat (GPIO) - Single Band (70cm) ▾
Node Type:	<input checked="" type="radio"/> Private <input type="radio"/> Public
APRS Host Enable:	<input type="checkbox"/>
APRS Host:	euro.aprs2.net ▾
System Time Zone:	Europe/Berlin ▾
Dashboard Language:	english_uk ▾



Hotspot - Einrichten

MMDVMHost Configuration

Setting	Value
DMR Mode:	<input checked="" type="radio"/> RF Hangtime: 20 Net Hangtime: 20
D-Star Mode:	<input type="radio"/> RF Hangtime: 20 Net Hangtime: 20
YSF Mode:	<input type="radio"/> RF Hangtime: 20 Net Hangtime: 20
P25 Mode:	<input type="radio"/> RF Hangtime: 20 Net Hangtime: 20
NXDN Mode:	<input type="radio"/> RF Hangtime: 20 Net Hangtime: 20
YSF2DMR:	<input type="radio"/>
YSF2NXDN:	<input type="radio"/>
YSF2P25:	<input type="radio"/>
DMR2YSF:	<input type="radio"/> Uses 7 prefix on DMRGateway
DMR2NXDN:	<input type="radio"/> Uses 7 prefix on DMRGateway
POCSAG:	<input type="radio"/> POCSAG Paging Features
MMDVM Display Type:	OLED Type 3 <input type="button" value="v"/> Port: /dev/ttyAMA0 <input type="button" value="v"/> Nextion Layout: G4KLX <input type="button" value="v"/>

Hotspot - Einrichten

SelfCare-Einstellungen

Benutzer Dashboard > SelfCare

2628307 (DF1HPK)

2638438 (DF1HPK)


Brand Hytera / Kenwood

Language Deutsch

APRS Interval Off - use CPS settings (Hytera Only)

Nur bei Hytera: Wenn Du diese Option auswählst, wird der Network Managed Mode aktiviert, und werden die CPS-Einstellungen im Funkgerät überschrieben. Wenn Du die CPS-Einstellungen verwenden möchtest, wähle OFF aus und programmiere Dein Funkgerät neu, falls notwendig.

APRS Callsign DF1HPK-7

APRS Icon 

In Call GPS Off

APRS Text Henrik

Compact / CSBK data Off

Text Capture Off
[Read this before enabling](#)

AirSecurity / TOTP Off

Hotspot Security

Password



Speichern

Standard wiederherstellen

Hotspot - Einrichten

Setting	Value
DMR Master:	BM_2622_Germany
DMR ESSID:	01
DMR Colour Code:	1
DMR EmbeddedLCOnly:	<input type="checkbox"/>
DMR DumpTADData:	<input checked="" type="checkbox"/>

Apply Changes

Setting	Value
DMR Master:	BM_2622_Germany
Hotspot Security:	*****
BrandMeister Network:	Repeater Information Edit Repeater (BrandMeister Selfcare)
DMR ESSID:	01
DMR Colour Code:	1
DMR EmbeddedLCOnly:	<input type="checkbox"/>
DMR DumpTADData:	<input checked="" type="checkbox"/>

Apply Changes

Setting	Value
Hostname:	pi-star Do not add suffixes such as .local
Node Callsign:	DF1HPK
CCS7/DMR ID:	2628307
Radio Frequency:	433.700.000 MHz
Latitude:	48.16 degrees (positive value for North, negative for South)
Longitude:	11.44 degrees (positive value for East, negative for West)
Town:	Munich, JN58RD
Country:	Germany
URL:	https://df1hpk.de <input type="radio"/> Auto <input checked="" type="radio"/> Manual
Radio/Modem Type:	DV-Mega Raspberry Pi Hat (GPIO) - Single Band (70cm)
Node Type:	<input checked="" type="radio"/> Private <input type="radio"/> Public
APRS Host Enable:	<input type="checkbox"/>
APRS Host:	euro.aprs2.net
System Time Zone:	Europe/Berlin
Dashboard Language:	english_uk

Apply Changes

Hotspot - Einrichten

Hostname: pi-star Pi-Star:4.1.5 / Dashboard: 20211021

Pi-Star Digital Voice Dashboard for DF1HPK

Dashboard | Admin | Configuration

Modes Enabled	
D-Star	DMR
YSF	P25
YSF XMode	NXDN
DMR XMode	POCSAG

Gateway Activity								
Time (CEST)	Mode	Callsign	Target	Src	Dur(s)	Loss	BER	

Local RF Activity							
Time (CEST)	Mode	Callsign	Target	Src	Dur(s)	BER	RSSI

Network Status	
D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR	NXDN Net
YSF2NXDN	YSF2P25
DMR2NXDN	DMR2YSF

Radio Info	
Trx	
Tx	433.700000 MHz
Rx	433.700000 MHz
FW	HS_Hat:v1.4.6
TCXO	14.7456 MHz

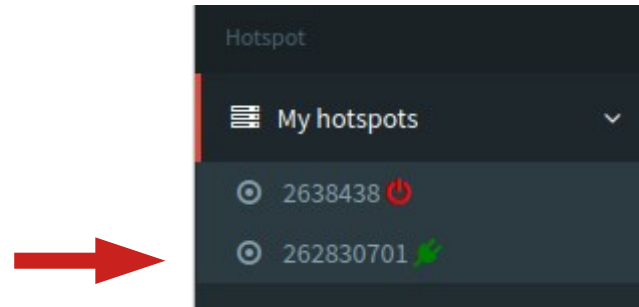
DMR Repeater	
DMR ID	2628307
DMR CC	1
TS1	disabled
TS2	enabled

DMR Master	
BM	2622 Germany

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2022.
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),
MMDVMDash developed by Kim Huebel (DG9VH),
Need help? [Click here for the Facebook Group](#)
or [Click here to join the Support Forum](#)
[Get your copy of Pi-Star from here.](#)

Hotspot - Einrichten

Brandmeister Dashboard



Einstellungen

Priority Message	<input type="text" value="Priority Message"/>		
Beschreibung	<input type="text" value="Beschreibung"/>		
Website	<input type="text" value="https://df1hpk.de"/>	Standort (Stadt)	<input type="text" value="Munich, JN58RD"/>
Latitude	<input type="text" value="48,16"/>	Longitude	<input type="text" value="11,44"/>
Leistung (ERP)	<input type="text" value="Leistung (ERP)"/>	Höhe AGL in m	<input type="text" value="0"/>

Einstellungen speichern

Hotspot - Einrichten

Rufzeichen	Einstellungen anzeigen	Einstellungen speichern	Sysops editieren	Aktionen
DF1HPK	✓	✓	✓	

+ Sysop zu DF1HPK hinzufügen

Actions

Get IP address Drop call Drop dynamic groups Reset connection

Statische Talkgroups

Statische Talkgroups

Geplante statische Talkgroups

+ Geplante statische TG hinzufügen

Aktive geplante statische Talkgroups:

Löschen

Geplante statische Talkgroups

+ Geplante statische TG hinzufügen

Aktive geplante statische Talkgroups:

TG: 91: Montag 11:30 - 14:30

Löschen

Hotspot - Einrichten

Hostname: pi-star Pi-Star-4.1.5 / Dashboard: 20211021

Pi-Star Digital Voice Dashboard for DF1HPK

Dashboard | Admin | Configuration

Modes Enabled	
D-Star	DMR
YSF	P25
YSF XMode	NXDN
DMR XMode	POCSAG

Gateway Activity								
Time (CEST)	Mode	Callsign	Target	Src	Dur(s)	Loss	BER	
19:15:26 Apr 5th	DMR TS2	DF1HPK (GPS)	TG 26283	Net	4.4	0%	0.0%	

Local RF Activity								
Time (CEST)	Mode	Callsign	Target	Src	Dur(s)	BER	RSSI	

Network Status	
D-Star Net	DMR Net
YSF Net	P25 Net
YSF2DMR	NXDN Net
YSF2NXDN	YSF2P25
DMR2NXDN	DMR2YSF

Radio Info	
Trx	Listening
Tx	433.700000 MHz
Rx	433.700000 MHz
FW	HS_Hat:v1.4.6
TCXO	14.7456 MHz


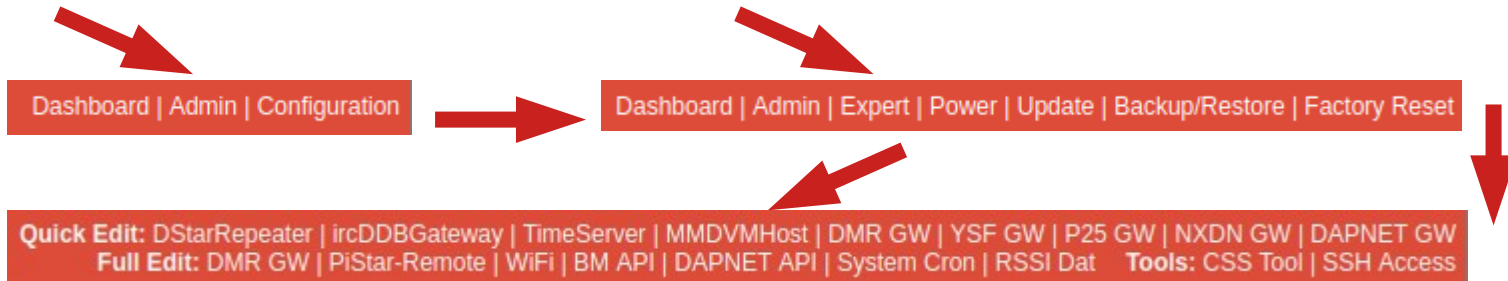
DMR Repeater	
DMR ID	2628307
DMR CC	1
TS1	disabled
TS2	enabled

DMR Master	
BM	2622 Germany

Pi-Star / Pi-Star Dashboard, © Andy Taylor (MW0MWZ) 2014-2022.
ircDDBGateway Dashboard by Hans-J. Barthen (DL5DI),
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or Click here to join the Support Forum
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Hotspot - Einrichten



Modem	
Port	/dev/ttyAMA0
TXInvert	1
RXInvert	0
PTTInvert	0
TXDelay	100
RXOffset	0
TXOffset	0
DMRDelay	0
RXLevel	50
TXLevel	50
RXDCOffset	0
TXDCOffset	0
RFLevel	100
CWIdTXLevel	50
D-StarTXLevel	50
DMRTXLevel	50
YSFTXLevel	50
P25TXLevel	50
NXDNTXLevel	50
POCSAGTXLevel	50
RSSIMappingFile	/usr/local/etc/RSSI.dat
Trace	0
Debug	0
M17TXLevel	50
FMTXLevel	50
AX25TXLevel	50
UseCOSAAsLockout	0
Protocol	uart
UARTPort	/dev/ttyAMA0
UARTSpeed	115200

Apply Changes

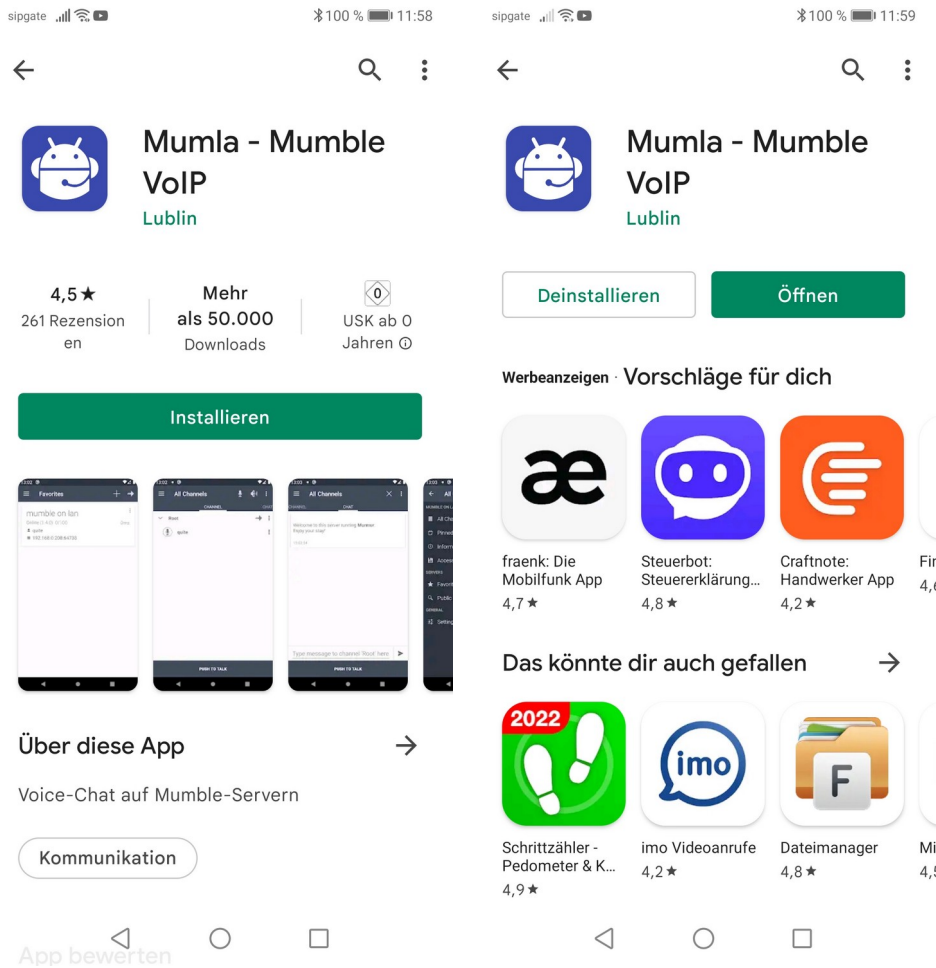
Hotspot - Betrieb

- „Keine“ Besonderheiten
- TG 4000 Trennt alle dynamische TGs
- TG 8 / TG 9 ohne Funktion
 - Statt TG 8 entsprechende Mirror TG nutzen

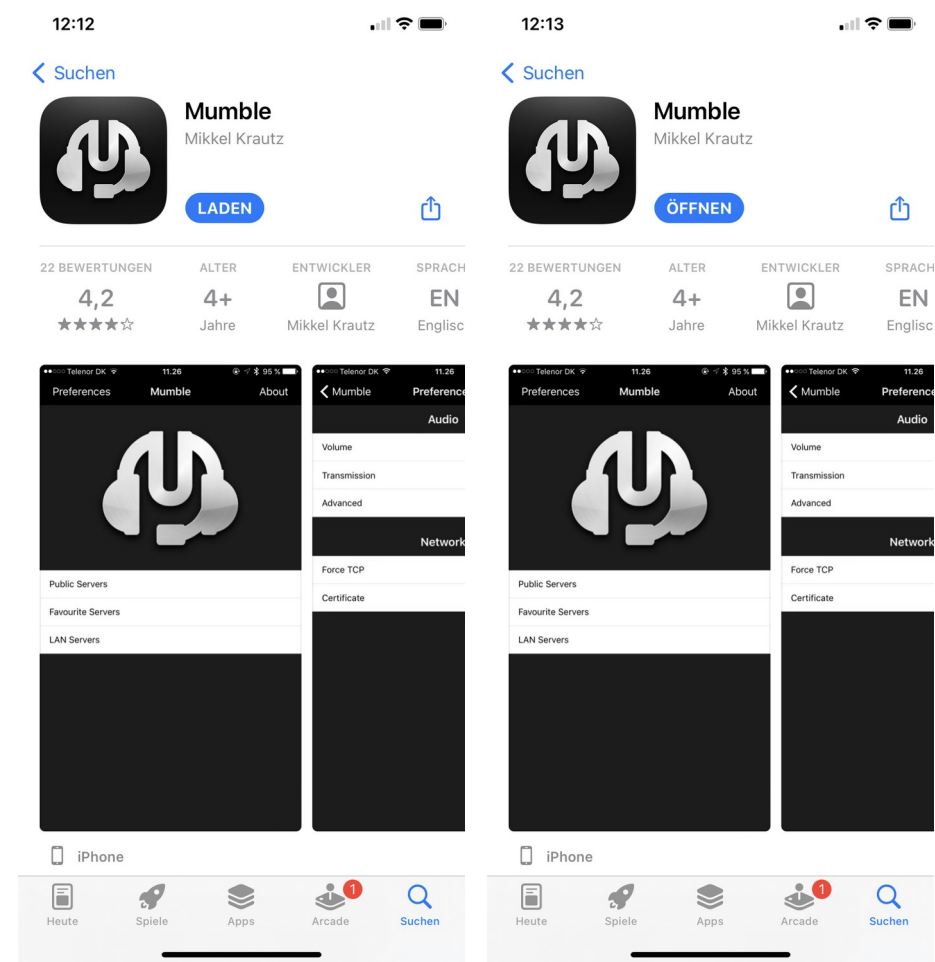
Mumble

- **Allgemeine Infos**
<http://bm262.de/bm-verbindet-mit-mumble/>
- **Android: „Mumla – Mumble VoIP“**
<https://play.google.com/store/apps/details?id=se.lublin.mumla>
- **iOS: „Mumble“**
<https://apps.apple.com/de/app/mumble/id443472808>
- **Windows / Mac OS / Linux**
<https://www.mumble.com/mumble-download.php>

Mumble

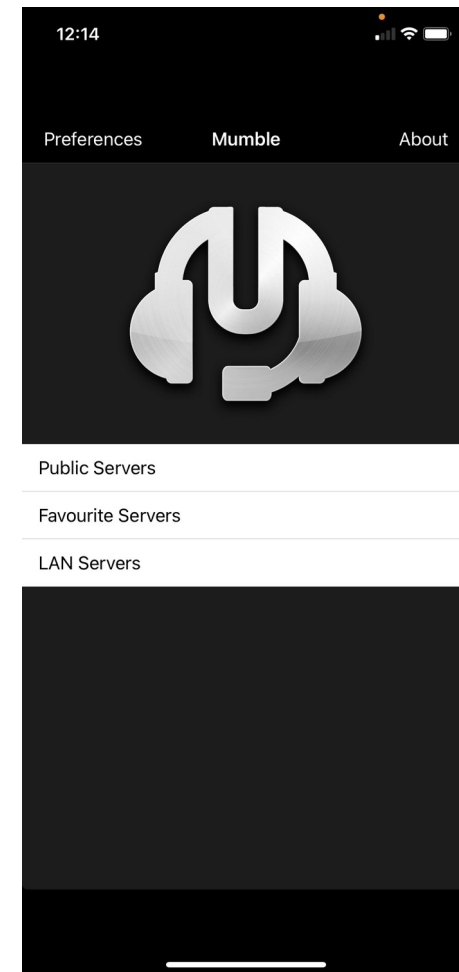
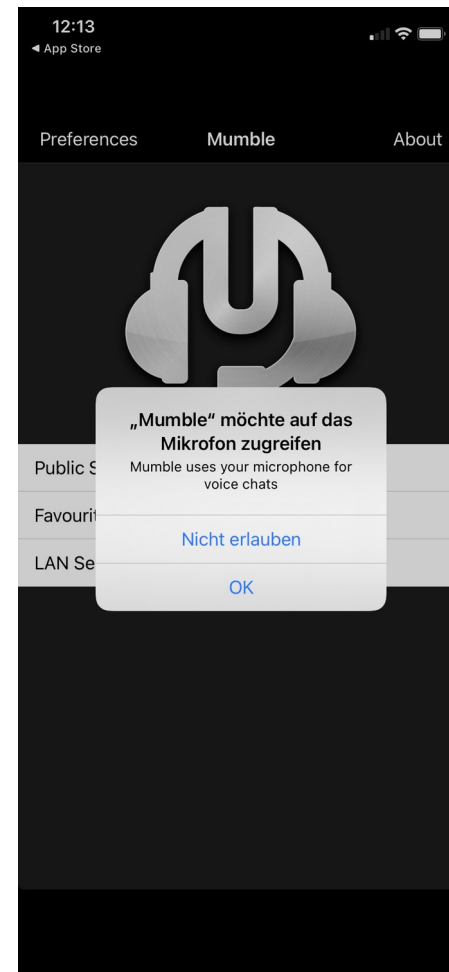


Android Playstore

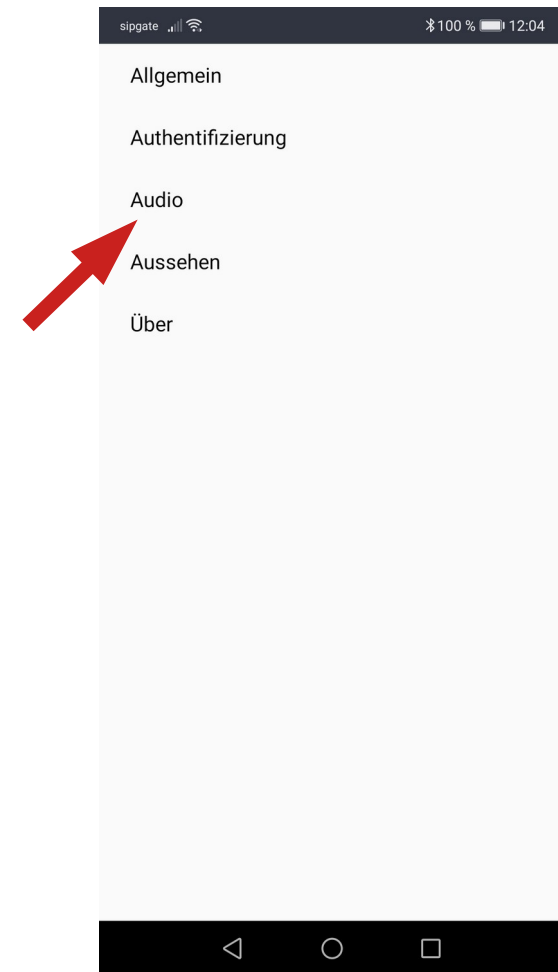
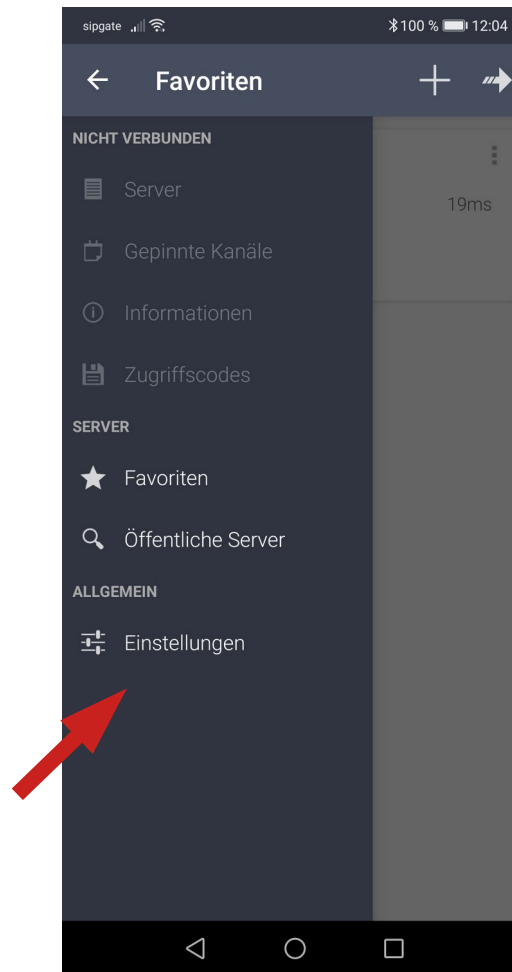
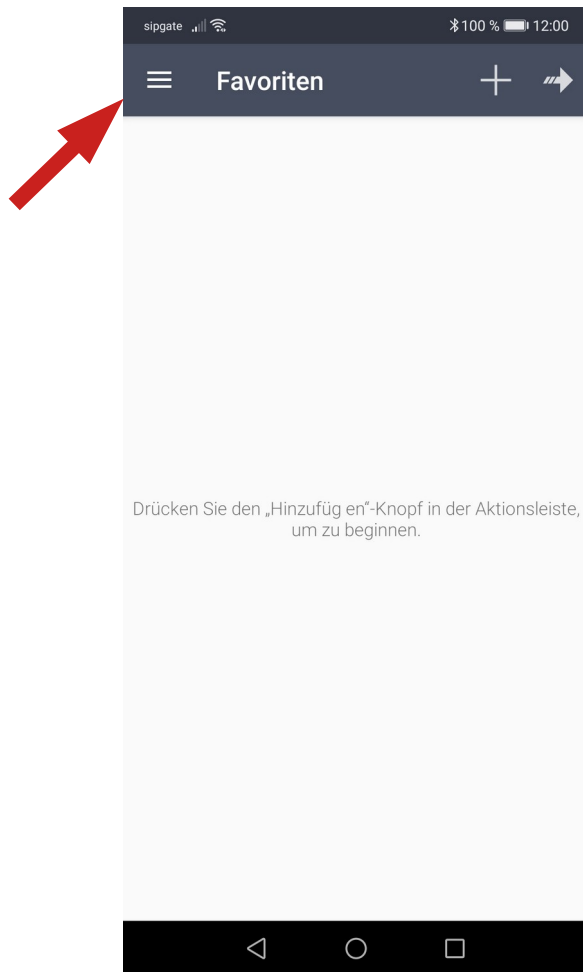


Apple AppStore

Mumble



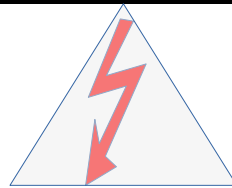
Mumble - Android



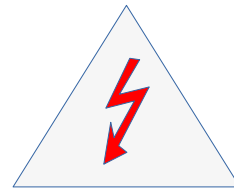
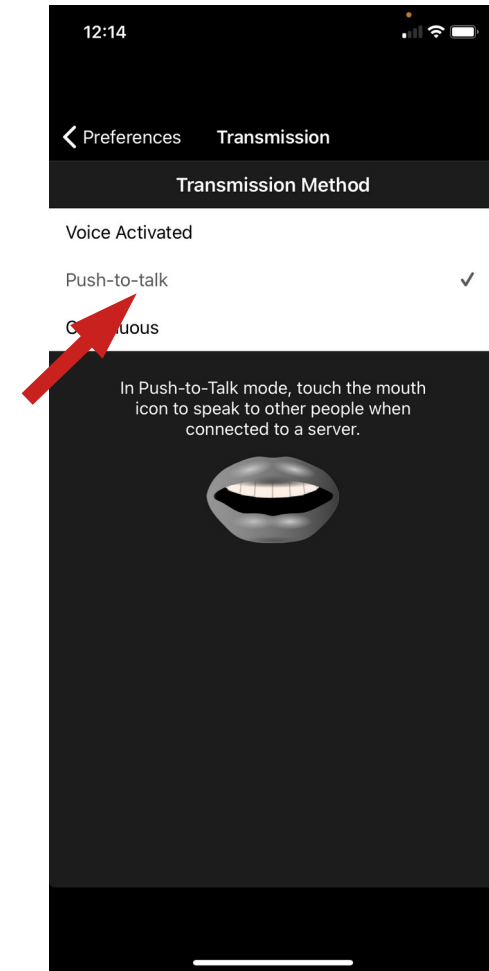
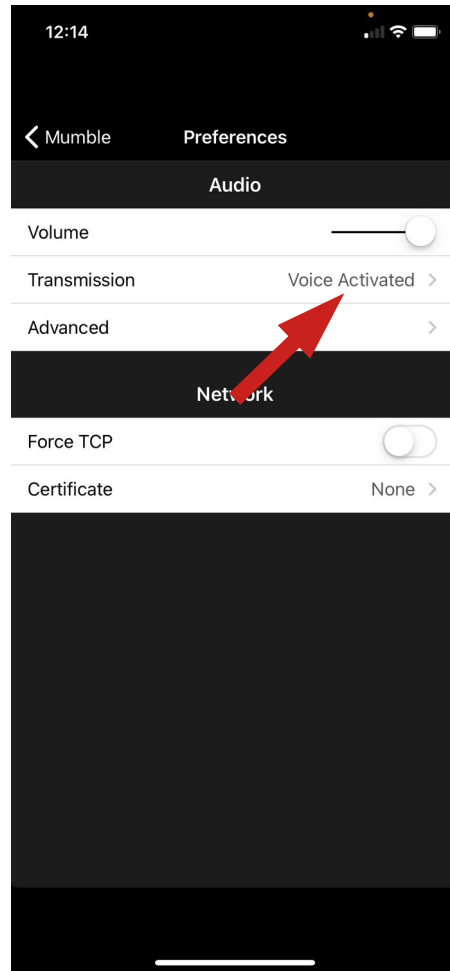
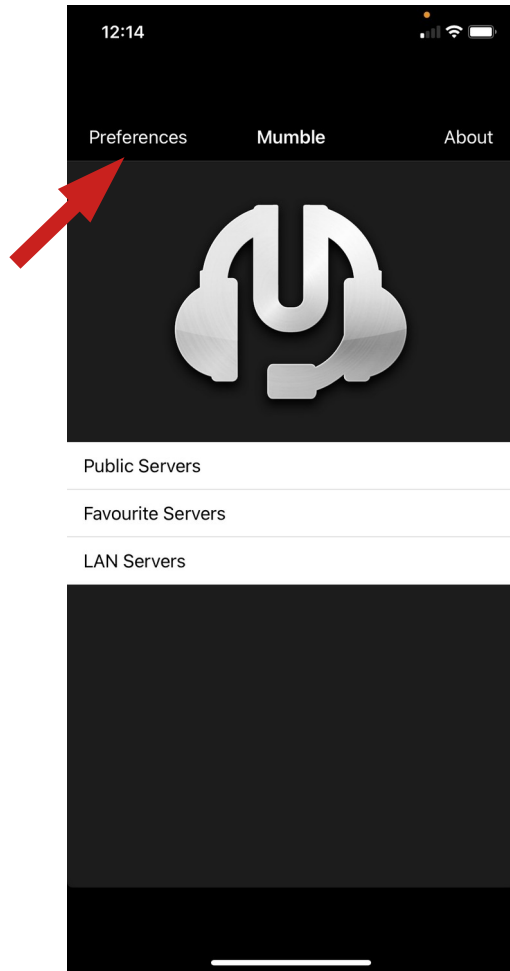
Mumble - Android

The image displays four sequential screenshots of the Mumble Android application's settings menu, illustrating the configuration of the 'Zum Sprechen drücken-Taste' (Speak button) feature. Red arrows indicate the progression from the main settings to the specific configuration dialog.

- Screenshot 1:** Shows the main settings screen. The 'Sendemodus' (Send Mode) is set to 'Sprachaktivität' (Voice Activity). A red arrow points to the 'Zum Sprechen drücken-Taste' option.
- Screenshot 2:** Shows the 'Sendemodus' dialog box. The 'Zum Sprechen drücken' (Speak) option is selected. A red arrow points to the 'Zum Sprechen drücken-Taste' option in the background settings.
- Screenshot 3:** Shows the 'Zum Sprechen drücken-Taste' dialog box. The message reads: 'Drücken Sie eine Hardwaretaste, um dieser „Zum Sprechen drücken“ zuzuweisen.' (Press a hardware key to assign to this 'Speak' button). The 'No Key' option is selected. A red arrow points to the 'Zum Sprechen drücken-Taste' option in the background settings.
- Screenshot 4:** Shows the 'Zum Sprechen drücken-Taste' dialog box. The message reads: 'Drücken Sie eine Hardwaretaste, um dieser „Zum Sprechen drücken“ zuzuweisen.' (Press a hardware key to assign to this 'Speak' button). The 'KEYCODE_VOLUME_DOWN' option is selected. A red arrow points to the 'Zum Sprechen drücken-Taste' option in the background settings.



Mumble - iOS



Mumble

SelfCare-Einstellungen

Benutzer Dashboard > SelfCare

2628307 (DF1HPK) 2638438 (DF1HPK)


Brand Hytera / Kenwood

Language Deutsch

APRS Interval Off - use CPS settings (Hytera Only)

APRS Callsign DF1HPK-7

Nur bei Hytera: Wenn Du diese Option auswählst, wird der Network Managed Mode aktiviert, und werden die CPS-Einstellungen im Funkgerät überschrieben. Wenn Du die CPS-Einstellungen verwenden möchtest, wähle OFF aus und programmiere Dein Funkgerät neu, falls notwendig.

APRS Icon 


In Call GPS 

APRS Text Henrik

Compact / CSBK data 

Text Capture 

[Read this before enabling](#)

AirSecurity / TOTP 

Hotspot Security

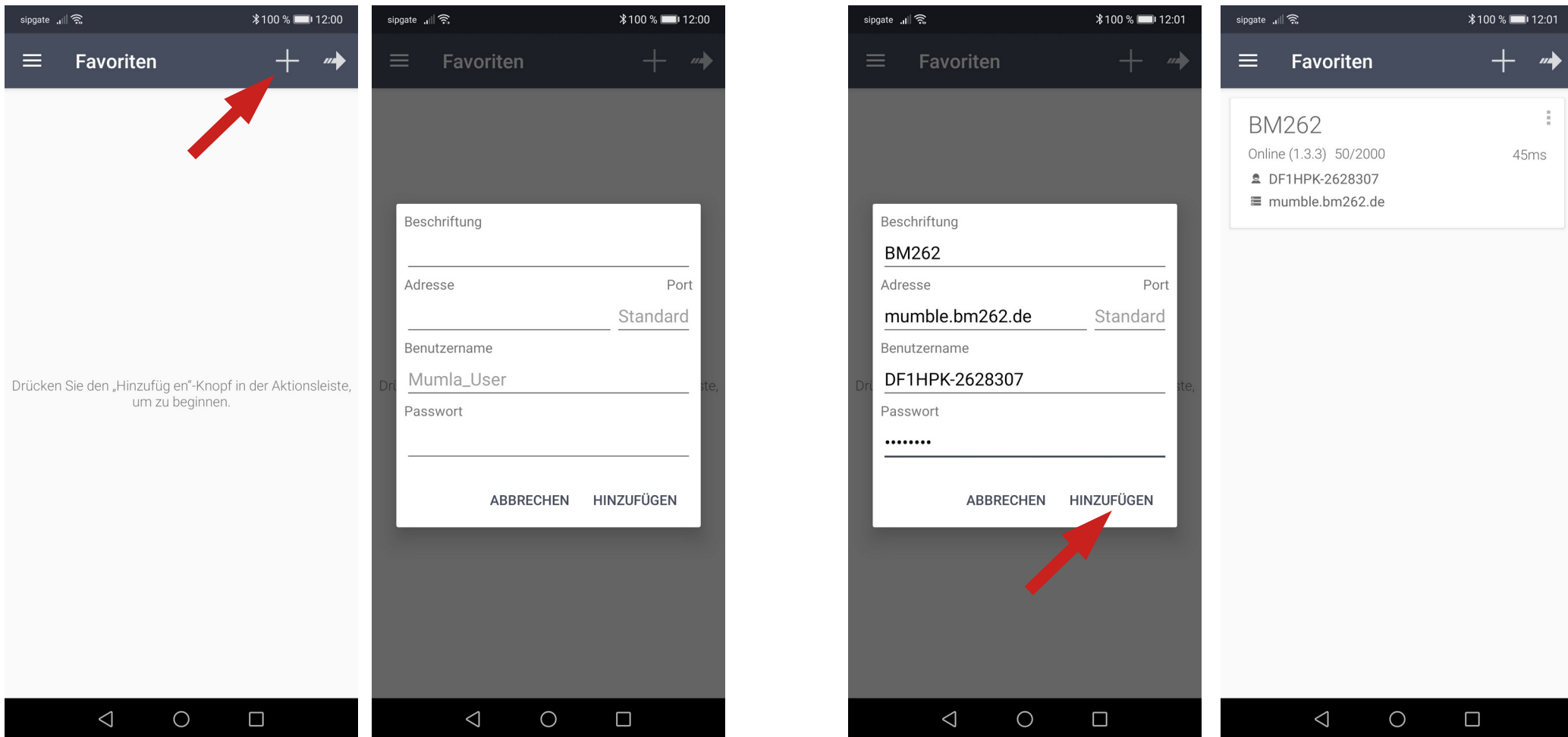
Password

Speichern

Standard wiederherstellen

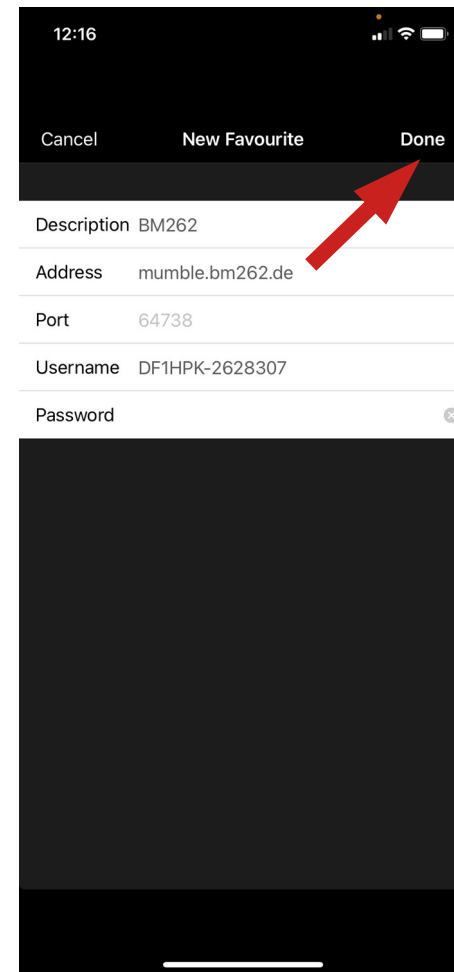
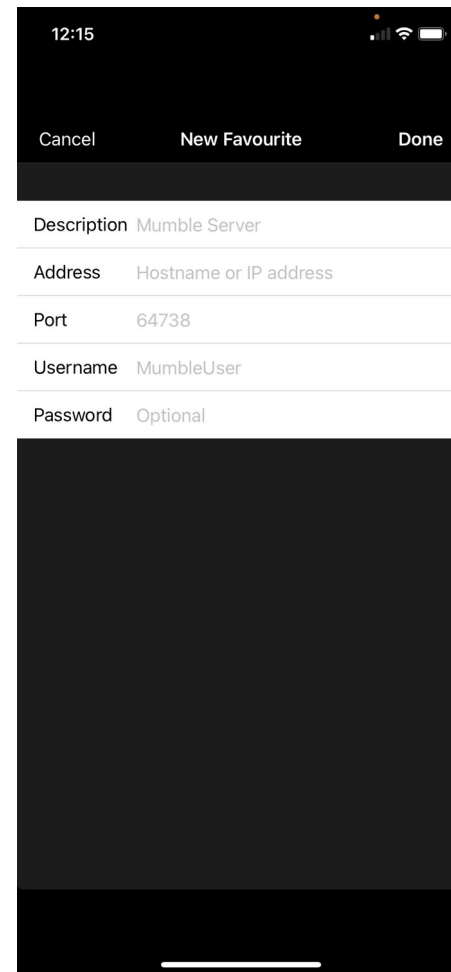
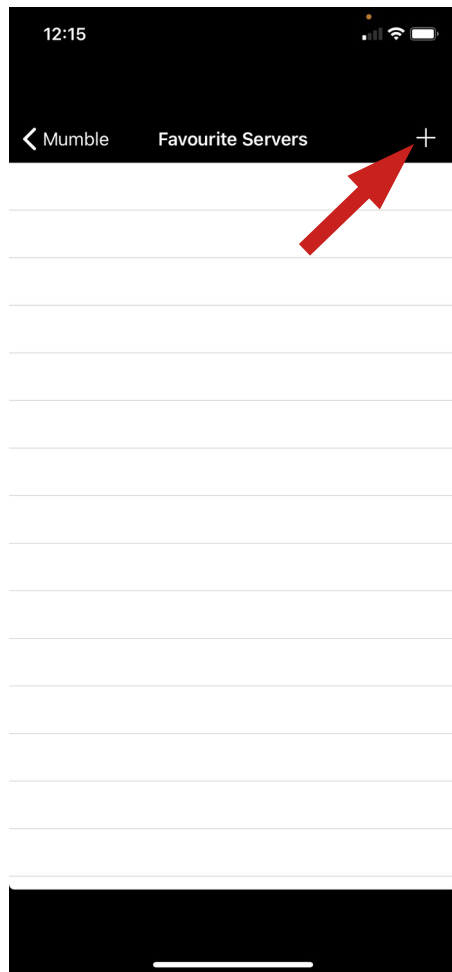
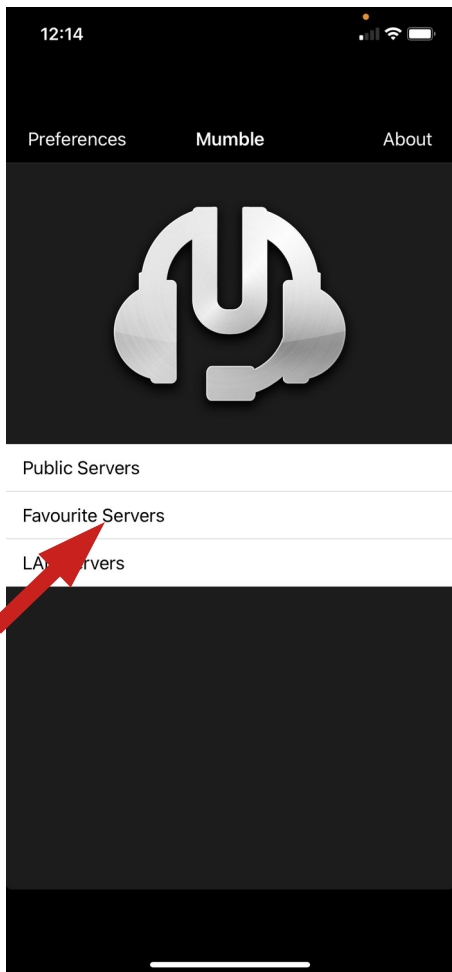
Passwort gilt auch für Zugang über Mumble!

Mumble - Android



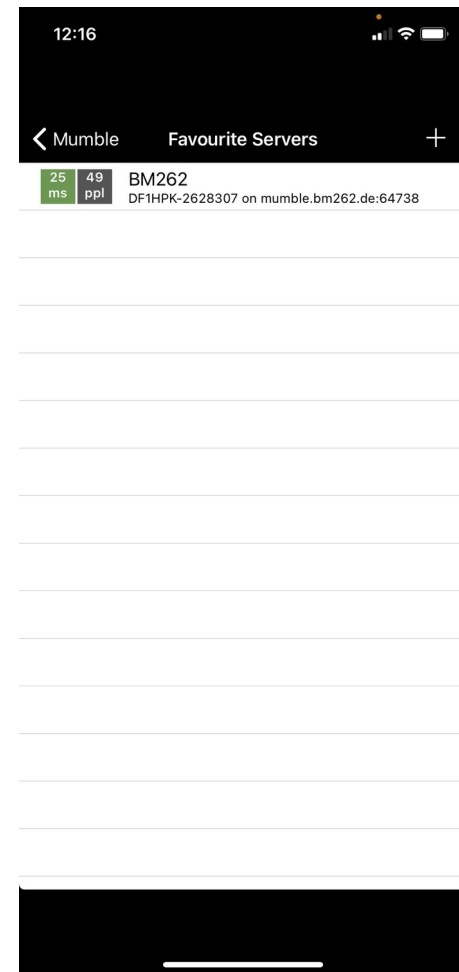
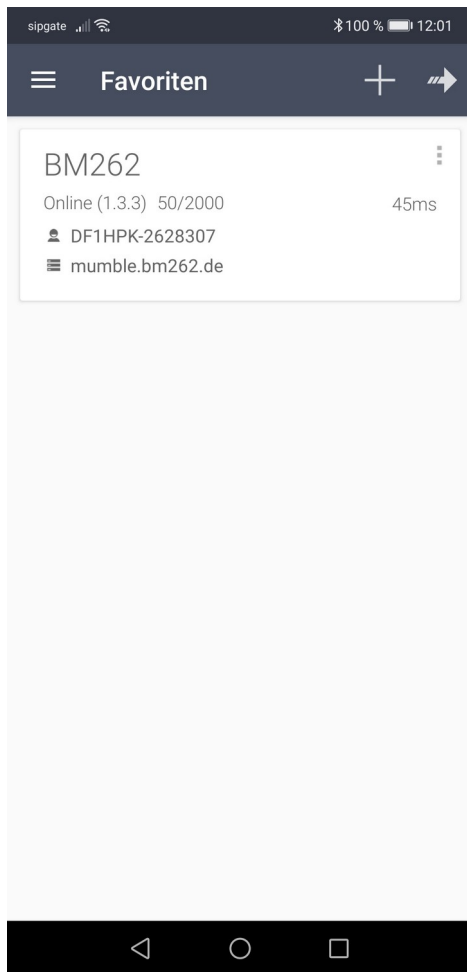
Passwort = Hotspot Password im Selfcare Bereich

Mumble - iOS

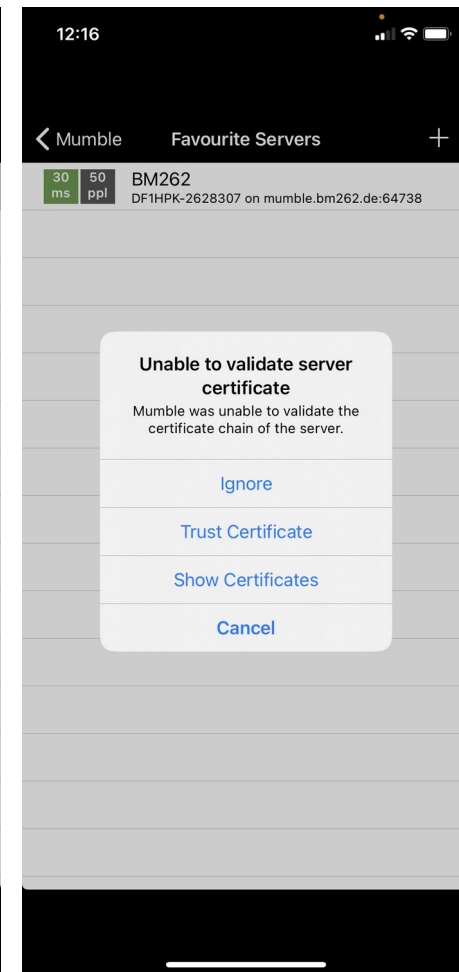
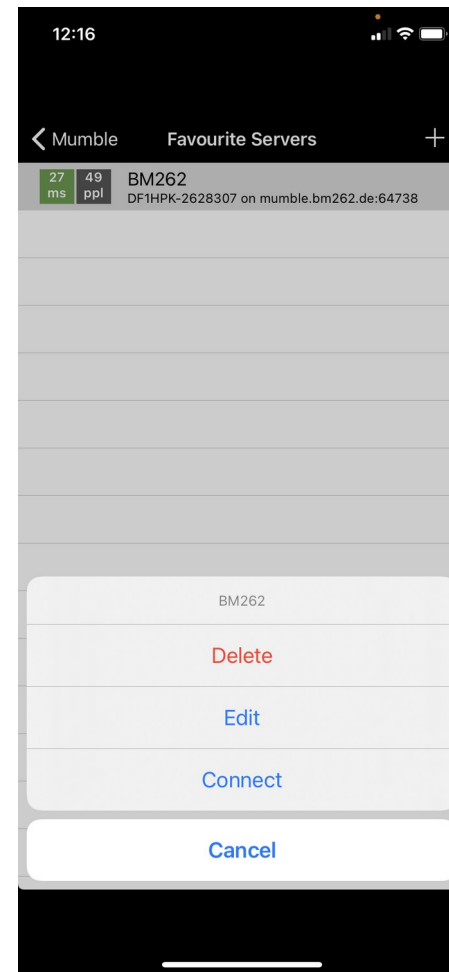
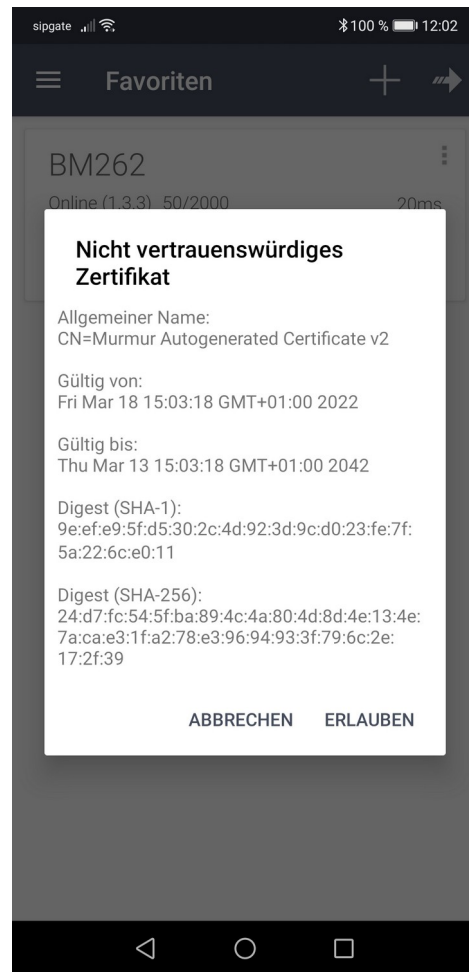
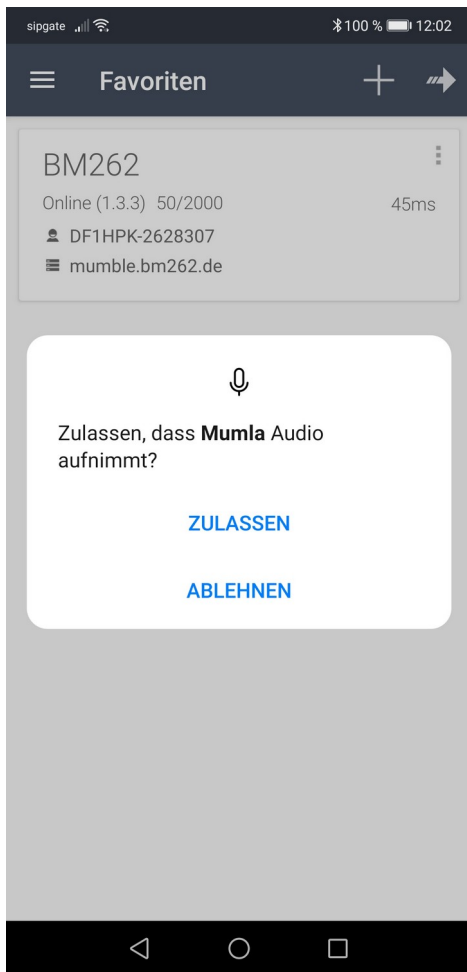


Passwort = Hotspot Password im Selfcare Bereich

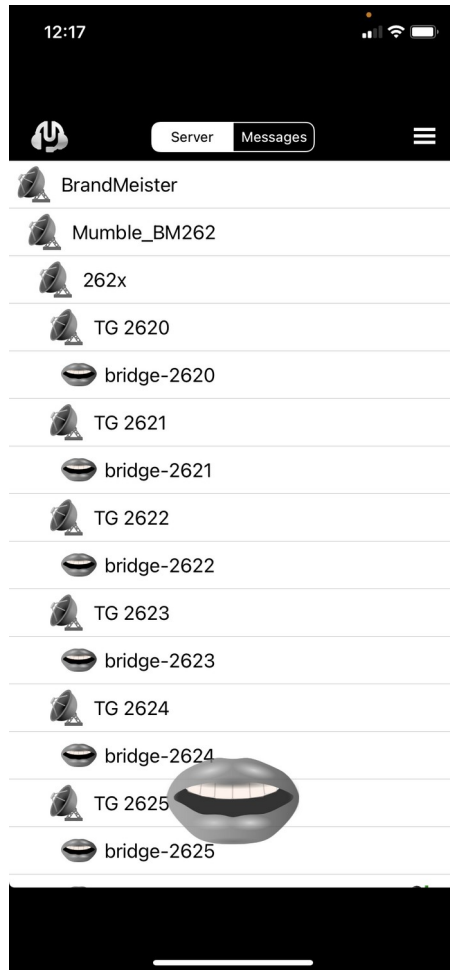
Mumble



Mumble

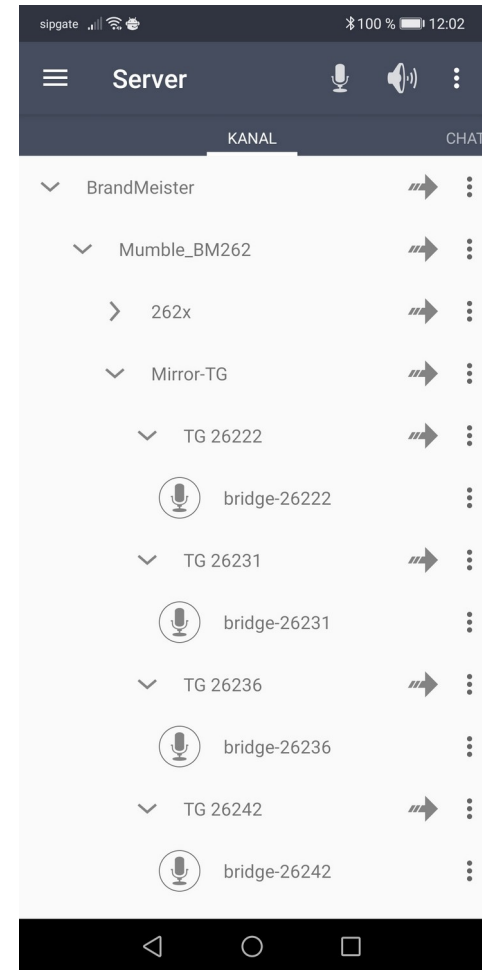


Mumble

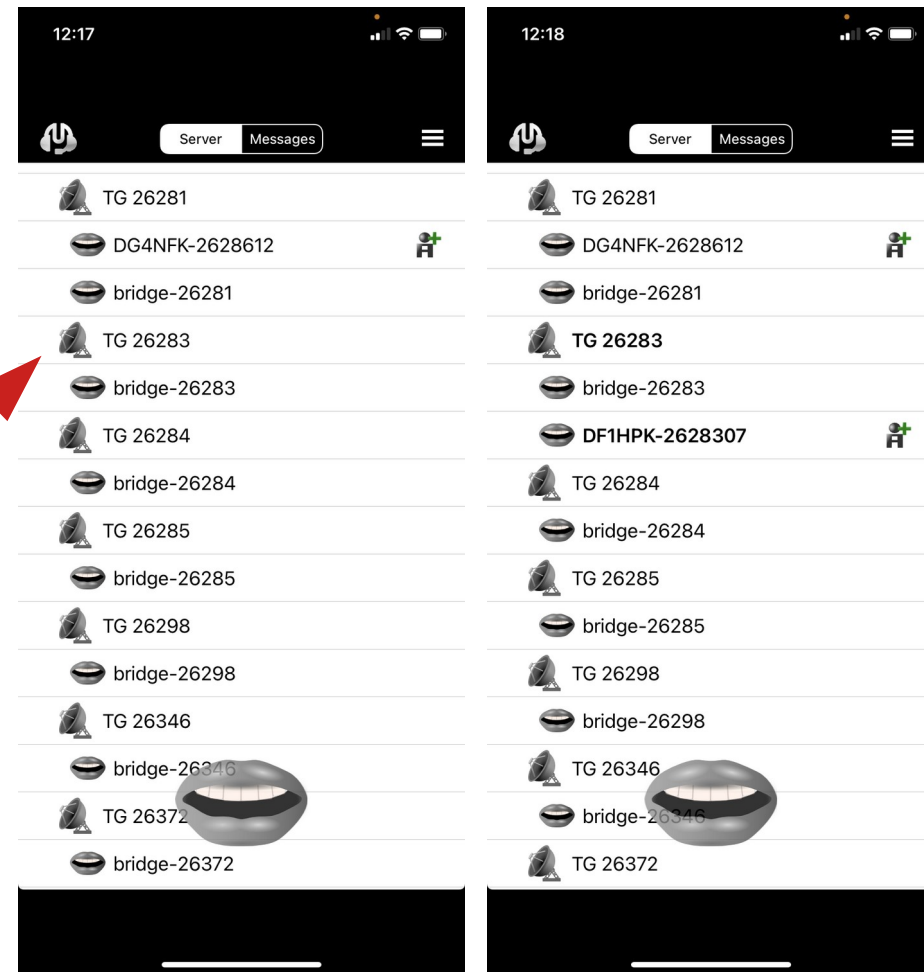
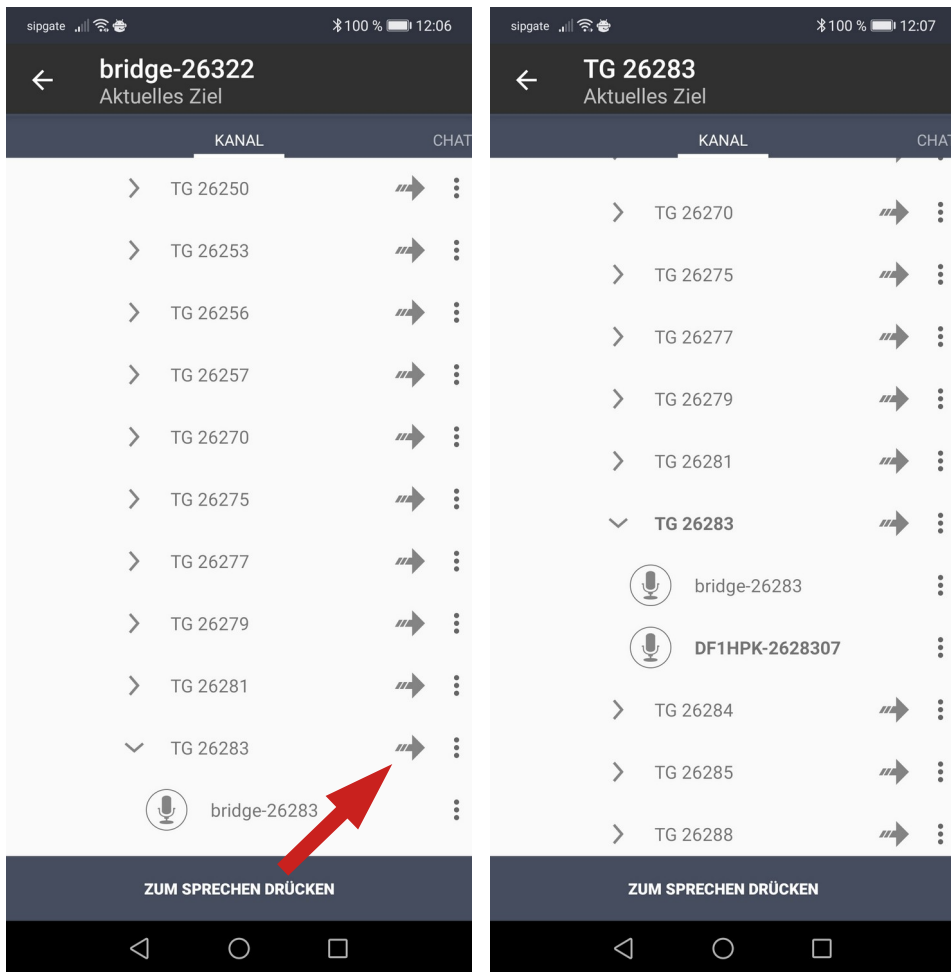


TGs in Mumble:

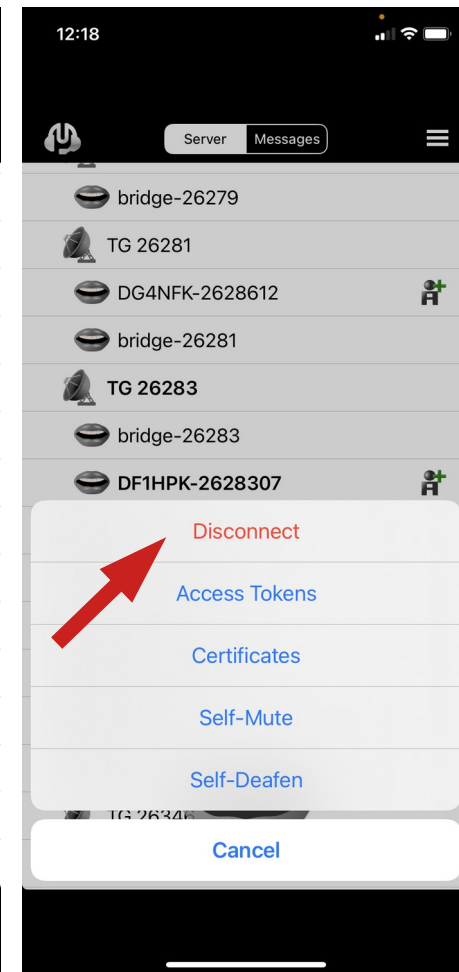
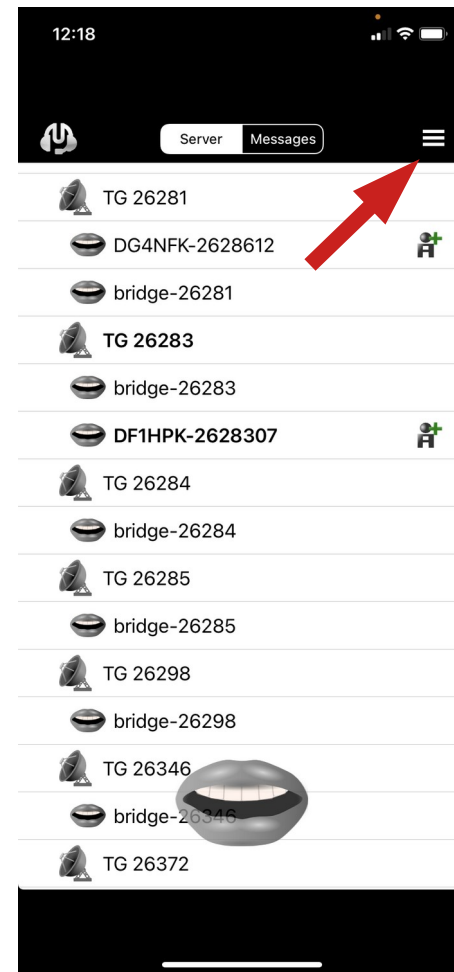
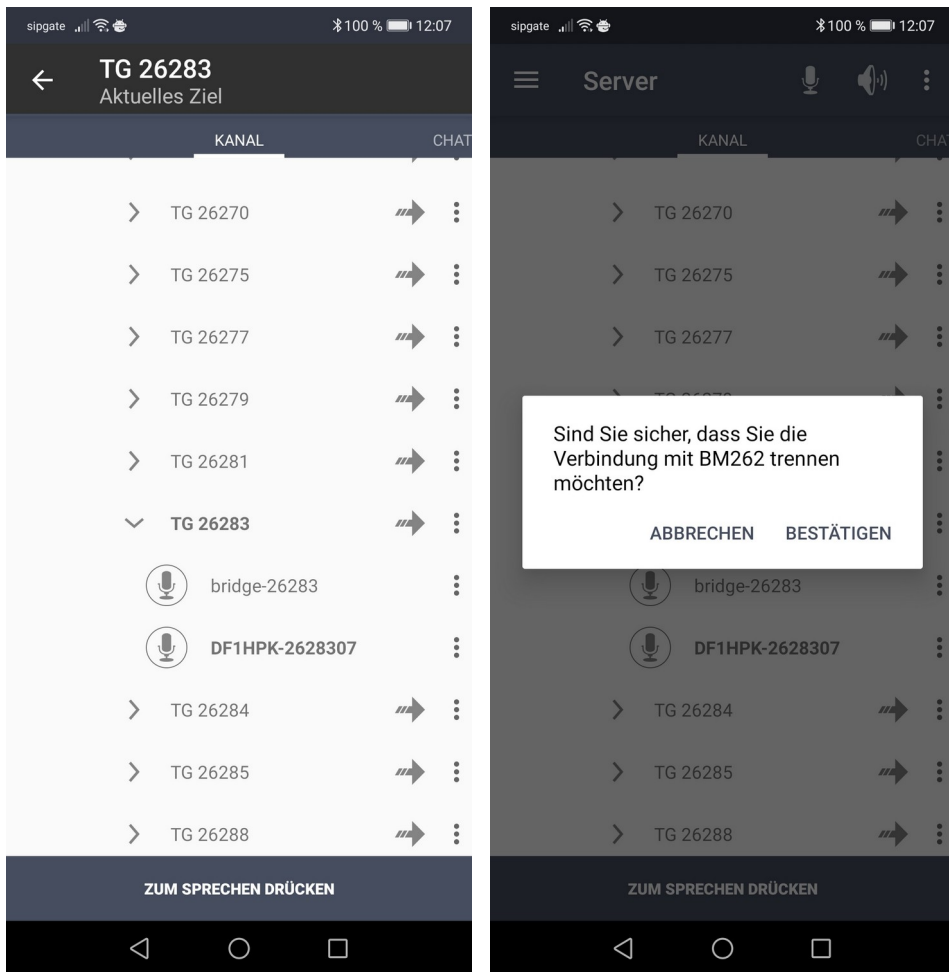
- 262, 263, 264
- 2620 – 2629
- Mirror-Tgs
- TACs
 - 26200
 - 26299
 - 26233
 - 26266



Mumble



Mumble



Quellen

- <https://www.pistar.uk>
 - <https://www.pistar.uk/downloads/>
 - <https://www.raspberrypi.com/software/>
 - https://www.pistar.uk/wifi_builder.php
 - http://pi-star.local/admin/expert/edit_mmdvmhost.php
 - <https://brandmeister.network/>
- <http://bm262.de/bm-verbindet-mit-mumble/>
 - <https://www.mumble.com/mumble-download.php>
 - <https://play.google.com/store/apps/details?id=se.lublin.mumla>
 - <https://apps.apple.com/de/app/mumble/id443472808>
 - https://t.me/BM262_Mumble