# fritz-tools Documentation

**Freifunk Darmstadt** 

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## Flashing Gluon

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This is a collection of useful scripts, primarily for use with the bootloader of AVM networking devices.

### General information

### **1.1 Selecting the right Image**

Gluon builds by default factory and sysupgrade images. AVM devices don't need special factory-images, so most of them are flashed via the sysupgrade images.

**Note:** In case your community uses a tool for providing firmware, factory-images are often referenced as "First-installation-images" and sysupgrade-images are often called "update-" or "upgrade-images".

Exceptions apply for the FRITZ!Box 4040. This device needs a special bootloader-image for use with the flash-script. Flashing with a sysupgrade image won't work.

#### Flash Gluon using Windows 10

Your router can be flashed in a few easy step from Windows 10.

#### 2.1 Preperation

First you need to download the image for your device from your local Freifunk community. This is important to do right now as you will have no ability to do so later on.

#### 2.2 Download Python 3 for Windows

Download and install the latest version of Python 3. It can be obtained from the website of the Python project.

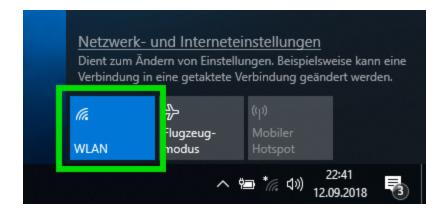
#### 2.3 Download the flash-script

Download the latest version of the flash-script fritzflash.py at the link below. In case you are prompted whether you want to save or open this file, select save.

fritzflash.py

#### 2.4 Disable WiFi

In case your computer is connected via WiFi, make sure to disable this connection by opening the Quick-settings in the lower right corner. Make sure WiFi is disabled there.



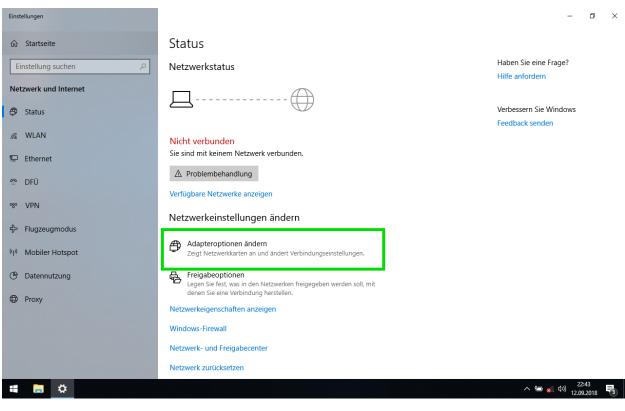
## 2.5 Configuring a static IP-address

Open the network settings by opening Quick-settings and navigate to the Network and Sharing Center.

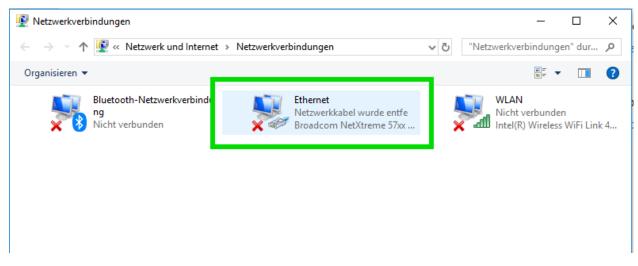
WLAN Ausge	l schaltet			
WLAN erneu	ıt aktivieren			
Manuell			`	2
Netzwerk- u	Ind Internetei	nstellunge	n se kann ein	ıe
Verbindung in	eine getaktete Ve	erbindung ge	ändert werden.	
<i>lii</i> . WLAN	好 Flugzeug- modus	(မှ) Mobiler Hotspot		
	~ 9 <u>4</u>	🗈 🎻 ላ»)	22:42 12.09.2018	3)

 $Go \ to \ the \ \mbox{Network}$  Adapter Settings.

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Select the adapter called Ethernet.



In the adapter-status window, select properties.

t dealthuoren Verbindung unte	versuchon Vorbundung umbog
🏺 Status von Ethernet	×
Allgemein	
Verbindung	
IPv4-Konnektivität:	Kein Netzwerkzugriff
IPv6-Konnektivität:	Kein Netzwerkzugriff
Medienstatus:	Aktiviert
Dauer:	00:00:11
Übertragungsrate:	100,0 MBit/s
Details	
Aktivität	
Gesendet —	Empfangen
Bytes: 14.401.754	96.565.592
Eigenschaften 😌 Deak	tivieren Diagnose
	Schließen

Double-click on Internet Protocol Version 4.

📲 ··· Netzwerk and internet / Netzwerkverbindunger /	
Eigenschaften von Ethernet	×
Netzwerk Freigabe	
Verbindung herstellen über:	
Broadcom NetXtreme 57xx Gigabit Controller	
Konfigurieren	
Diese Verbindung verwendet folgende Elemente:	
Client für Microsoft-Netzwerke	1
🗹 🐺 Datei- und Druckerfreigabe für Microsoft-Netzwerke	
Internetprotokoll, Version 4 (TCP/IPv4)	
apter	
Microsoft-LLDP-Treiber	
Internetprotokoll, Version 6 (TCP/IPv6)	
< >	
Installieren Deinstallieren Eigenschaften	
Beschreibung	
Ermöglicht Ihrem Computer den Zugriff auf Ressourcen in	
einem Microsoft-Netzwerk.	
OK Abbreche	n

Fill out all fields as seen on the image below. Close afterwards both windows by clicking OK.

1.2 1. 1. 1. 1. 1. 21	
Eigenschaften von Internetprotokoll, V	Version 4 (TCP/IPv4) X
Allgemein	
IP-Einstellungen können automatisch z Netzwerk diese Funktion unterstützt. V Netzwerkadministrator, um die geeigne	Wenden Sie sich andernfalls an den
O IP-Adresse automatisch beziehen	
Folgende IP-Adresse verwenden:	
IP-Adresse:	192.168.178.2
Subnetzmaske:	255.255.255.0
Standardgateway:	192 . 168 . 178 . 1
DNS-Serveradresse automatisch l	beziehen
Folgende DNS-Serveradressen ver	erwenden:
Bevorzugter DNS-Server:	
Alternativer DNS-Server:	
Einstellungen beim Beenden über	rprüfen
	Erweitert
	OK Abbrechen

## 2.6 Install Gluon

Now move both fritzflash.py and the Gluon image in an empty directory.

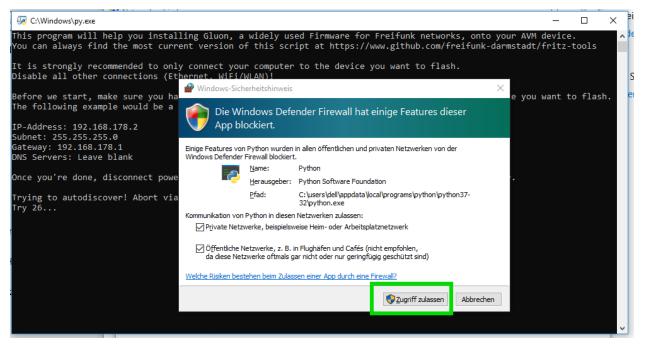
Note: It is important both files are located in the same directory. Otherwise the process won't work.

🖌   🛃 📙 🛨   Dow	nload	5			- 🗆	×
atei Start Fi	reigebo	en Ansicht				$\sim$
> • • 🕇 🖊	> Die	ser PC > Downloads	~	් "Downloads	" durchsuchen	P
🖈 Schnellzugriff		Name	Änderungsdatum	Тур	Größe	
Desktop	*	📄 fritzflash	12.09.2018 22:48	Python File	9 KB	
Desktop	*	gluon-ffda-1.2.3-avm-fritz-box-4020-s	ys 12.09.2018 22:47	BIN-Datei	4.353 KB	
🚆 Dokumente	*					
📰 Bilder	*					
💧 Musik						

Connect the router with your computer. In case it has multiple ports, use the yellow LAN-ports.

Execute the flash-script by double-clicking on fritzflash.py.

In case Windows Firewall asks you whether you want to allow or deny network activity, select Allow.



#### 2.7 Revert network settings

Before you are able to reach the Config-mode of your new node you have to reconfigure your network interface to automatically obtain an IP-address using DHCP.

Configure your network interface interface as pictured on the screenshot below and confirm by selecting OK in both windows.

e d	Eigenschaften von Internetprotokoll, Version 4 (TCP/IPv4) X
	Allgemein Alternative Konfiguration
)ie C	IP-Einstellungen können automatisch zugewiesen werden, wenn das Netzwerk diese Funktion unterstützt. Wenden Sie sich andernfalls an den Netzwerkadministrator, um die geeigneten IP-Einstellungen zu beziehen.
	IP-Adresse automatisch beziehen
	O Folgende IP-Adresse verwenden:
E	IP-Adresse:
	Subnetzmaske:
	Standardgateway:
E	ONS-Serveradresse automatisch beziehen
	O Folgende DNS-Serveradressen verwenden:
	Bevorzugter DNS-Server:
	Alternativer DNS-Server:
	Einstellungen beim Beenden überprüfen
	Erweitert
n	OK Abbrechen

Also remember to turn on your WiFi again.

#### Flash Gluon using MacOS X

Your router can be flashed in a few easy step from MacOS X.

### 3.1 Preperation

To execute the fritzflash.py script you need to have Python 3 installed. You can obtain the latest version from the Python project here.

You also need to download the image for your device from your local Freifunk community. This is important to make right now as you will have no ability to do so later on.

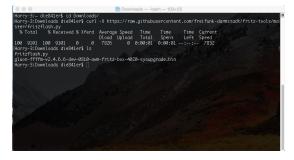
## 3.2 Download the flash-script

Open a terminal by pressing cmd+Space.

Next, go to the directory you saved the Image you downloaded in the preperation step. In most cases this is done by executing cd Downloads.

Now you want to download the script by executing curl -O https://raw.githubusercontent.com/ freifunk-darmstadt/fritz-tools/master/fritzflash.py.

Confirm both the Gluon image you want to flash and the script are present in the current directory by executing 1s.



Keep the Terminal window open.

### 3.3 Configuring a static IP-address

Open System Preferences and select Network.



Make sure to disable your Wireless connection now.



Select Ethernet from the left menu and in case input fields are grayed out, unlock settings by clicking on the Lock in the bottom left corner.

	Network	
Bluetooth F Not Connect USB-S_tro Not Configue Ethernet 2 Not Connect Not Configue	System Preferences is trying to unlock the Network preferences. Enter an administrator's name and password to allow this. User Name: Password: Cancel Unit	oged in
Ethernet	Router:	
• Wi-Fi 🔶	DNS Server:	
USB 100 LAN      Not Connected	Search Domains:	
iPhone USB     Not Connected		
HUAWMobile		
+ - &-		Advanced ?
Aut2nticating		Revert Apply

Configure your settings as seen in following screenshot and confirm by clicking on Apply. Keep the window opened.



### 3.4 Install Gluon

Connect the router with your computer. In case it has multiple ports, use the yellow LAN-ports.

Execute the flash-script by executing python3 fritzflash.py in the Terminal window you left open.



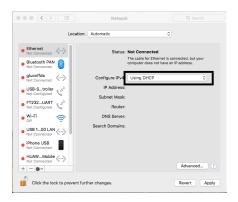
In case you're asked to allow incoming connection or not select Allow.



## 3.5 Revert network settings

Before you are able to reach the Config-mode of your new node you have to reconfigure your network interface to automatically obtain an IP-address using DHCP.

Configure your Ethernet interface as pictured on the screenshot below and confirm by selecting Apply.



#### Flash Gluon using Ubuntu 18.04

Your router can be flashed in a few easy step from Ubuntu 18.04.

#### 4.1 Preperation

First you need to download the image for your device from your local Freifunk community. This is important to do right now as you will have no ability to do so later on.

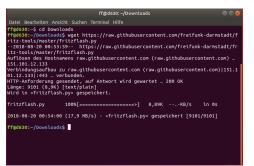
#### 4.2 Download the flash-script

Open a terminal by pressing Ctrl+Alt+T or open the application-drawer (bottom left) and search for Terminal.



Next, go to the directory you saved the image you downloaded in the preparation step. In most cases this is done by executing cd Downloads.

Now you want to download the script by executing wget https://raw.githubusercontent.com/ freifunk-darmstadt/fritz-tools/master/fritzflash.py.



Confirm both the Gluon image you want to flash and the script are present in the current directory by executing ls.

Keep the Terminal window open.

## 4.3 Configuring a static IP-address

Open the settings application.

If your computer has WiFi, make sure to disable it now.

٩	Einstellungen	WLAN Verbunden E 🔿	•
Ŧ	WLAN	1 Fluazeugmodus	
*	Bluetooth	Flugzeugmodus Deaktiviert Funknetzwerke, Bluetooth und mobiles Breitband	
۲	Hintergrund		
Q	Dock	Sichtbare Netzwerke	
٠	Benachrichtigungen		
۹	Suchen		
	Region und Sprache		
0	Zugangshilfen		
ŧÐs	Online-Konten		
۵	Datenschutz		
<	Freigabe		
40	Klang		
Ge	Energie		
ō,	Netzwerk		
Ф	Geräte		
٨	Informationen		

Select Network from the left menu and open the settings by clicking on the gear button.

٩	Einstellungen	Netzwerk	• • •
Ŷ	WLAN		
*	Bluetooth	Kabelgebunden +	
⊴	Hintergrund	Verbunden - 100 Mb/s	
Q	Dock	vpn 2+	
	Benachrichtigungen	Nicht eingerichtet	
Q	Suchen		
2	Region und Sprache	Netzwerk-Proxy Aus 🔯	
0	Zugangshilfen		
ŧÐĭ	Online-Konten		
۵	Datenschutz		
\$	Freigabe		
40	Klang		
Ge	Energie		
<u>9</u> 2	Netzwerk	1	
÷0	Geräte >	±	
٨	Informationen >		

Configure your Settings as seen in the following screenshot and confirm by clicking on Apply in the top right corner.

ormationen Ider	ntität IPv4 Pv6 Sicherhei		
IPv4-Methode	O Automatisch (DHCP)	O Nur Link-Loo	al:
	O Manuell	<ul> <li>Deaktivierer</li> </ul>	1
Adressen			
Adresse	Netzmaske	Gateway	
192.168.178.2	24	192.168.178.1	G
			G
DNS		Automatisch AN	1
DNS		Automatisch AN	1
DNS	mmata trennen	Automatisch AN	
	nmata trennen	Automatisch AN	

Now you will need to deactivate and reactivate the network interface to correctly apply the settings. Do so by turning the connection from On to Off. Wait two seconds and turn the connection back On again.

٩	Einstellungen		Netzwerk	
Ŷ	WLAN			
*	Bluetooth		Kabelgebunden	+
₫	Hintergrund		Verbunden - 100 Mb/s	AN
Q	Dock		VPN	+
	Benachrichtigungen		Nicht eingerichtet	
۹	Suchen			
ß	Region und Sprache		Netzwerk-Proxy	Aus 🔯
0	Zugangshilfen			
Ðĭ	Online-Konten			
4	Datenschutz			
<	Freigabe			
40	Klang			
Ge	Energie			
÷	Geräte	>		
٨	Informationen	>		

Keep the settings window open.

#### 4.4 Install Gluon

Connect the router with your computer. In case it has multiple ports, use the yellow LAN-ports.

Execute the flash-script by executing python3 fritzflash.py in the Terminal window you left open.



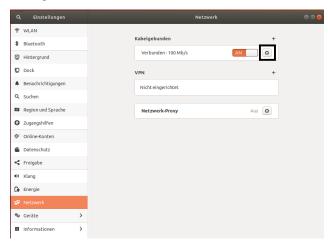
### 4.5 Revert network settings

Before you are able to reach the Config-mode of your new node you have to reconfigure your network interface to automatically obtain an IP-address using DHCP.

Configure your network interface interface as pictured on the screenshot below and confirm by selecting Apply.

IPv4-Methode	• Automatisch (DHCF	) O Nur Li	ink-Local ivieren
DNS		Automatise	th AN
Strecken		Automatise	h AN
Adresse	Netzmaske	Gateway	Metrik
			0
		leren Netzwerk ve	

You will (again) need to deactivate and reactivate the Network interface to correctly apply the settings. Do so by turning the connection from On to Off. Wait two seconds and turn the connection back On again.



## Supported Devices

These devices are confirmed working using the tools provided in this repository.

- FRITZ!Box 4020
- FRITZ!Box 4040
- FRITZ!WLAN Repeater 300E
- FRITZ!WLAN Repeater 450E
- FRITZ!WLAN Repeater 1750E

License

See LICENCE

Indices and tables

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- search