

Setting up FRITZ!Box 7390 to forward incoming VPN traffic

Schematic

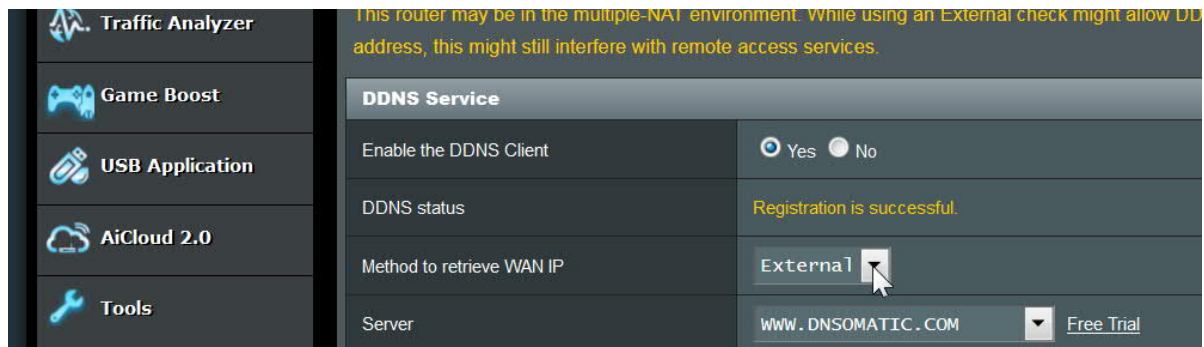
ISP --→ FRITZ!Box 7390 modem/router --→ Asus RT-AC86U router --→ File server

This is a double-NAT configuration. In order to use a VPN connection to access the file server from a laptop while travelling, port forwarding needs to be set up on the FRITZ!Box.

The FRITZ !Box is running the (quite old) 6.53 firmware as supplied by the ISP. The Asus is running the very recent Asuswrt-Merlin 384.13.

1-Set up DDNS with External IP address

On the Asus router go to the WAN / DDNS tab and make sure that DDNS is set up as External. (This is a new option with recent versions of Merlin.)



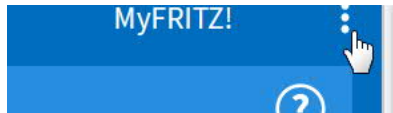
This setting means that Asuswrt-Merlin reports to the DDNS service the public IP address of the upstream ISP ADSL modem / router, not its own WAN address, which it receives by DHCP from the ADSL modem.

(If your ISP gives you a static IP address which never changes, you might not need to set up DDNS at all.)

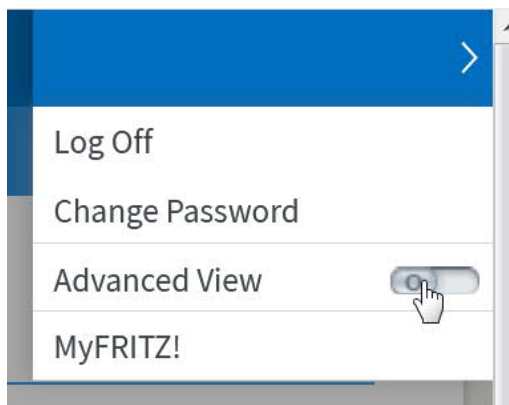
2-On FRITZ!Box, assign an internal IP address for Asus router

Some of the menu options on the FRITZ!Box may not be available unless you have set up "Advanced View" as follows:

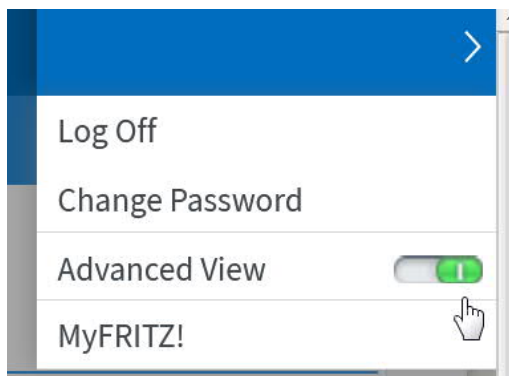
At the top right of the screen, click the 3 vertical dots to open the drop-down menu:



The menu opens as follows:

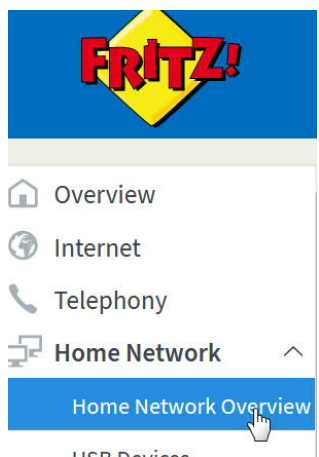
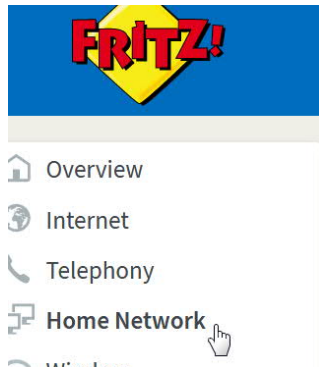


Click on the slider to switch on Advanced View:

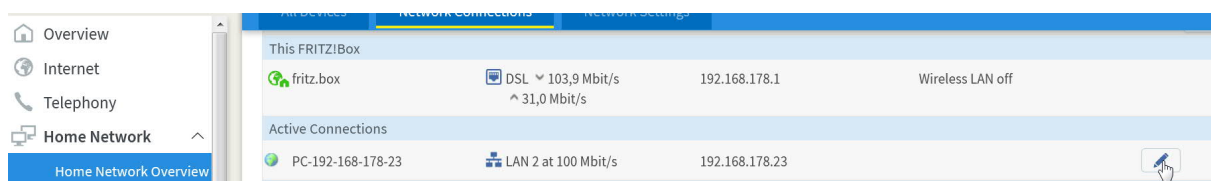


Now set up the assigned IP address for the downstream router, as follows:

On the FRITZ!Box go to the setting Home Network / Home Network Overview / Network Connections.



Find the line which corresponds to your Asus router, and click on the pencil icon to edit the setting. (In the picture below, the FRITZ!Box wrongly describes the router as a PC.)



Check the box marked "Always assign this network device the same IPv4 address".

FRITZ!Box Fon WLAN 7390

Details for PC-192-168-178-23

This page shows detailed information on the network device or user.

Name	PC-192-168-178-23
IPv4 address	192.168.178.23
	<input checked="" type="checkbox"/> Always assign this network device the same IPv4 address
Device information	04:D4: [redacted] udhcp [redacted]

Scroll down and click OK.

Overview
Internet
Telephony
Home Network
Home Network Overview
USB Devices
Storage (NAS)
Media Server
FRITZ!Box Name
Smart Home
Wireless
DECT
Diagnostics

PC-192-168-178-23 LAN 2 fritz.box

Access Properties

Parental controls

Internet Use	Online Time	Access profile
unrestricted	unlimited	Standard

Wake on LAN

With the "Wake on LAN" function you can start a computer in stand-by mode over the network.

☐ Start this computer automatically as soon as it is accessed from the Internet

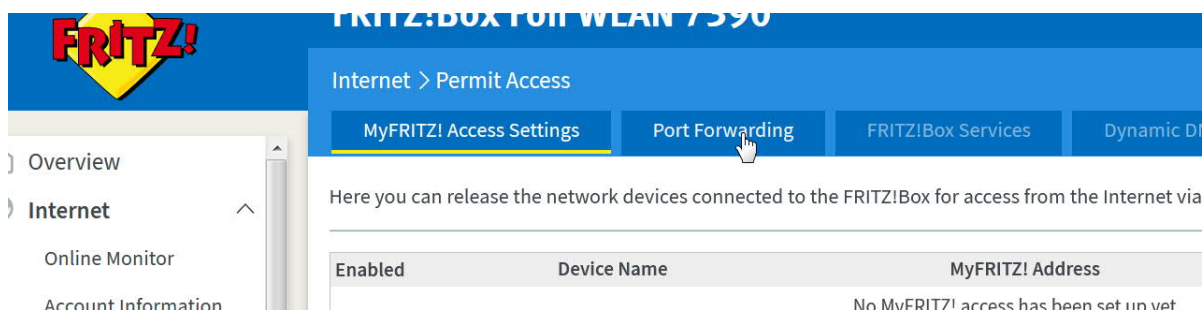
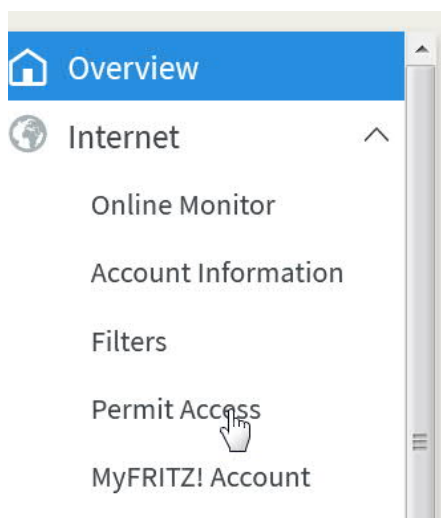
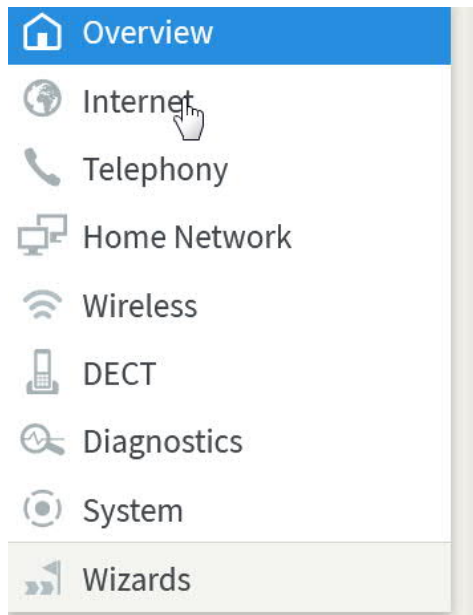
Click here to start this computer from Standby mode (Wake on LAN).

Star

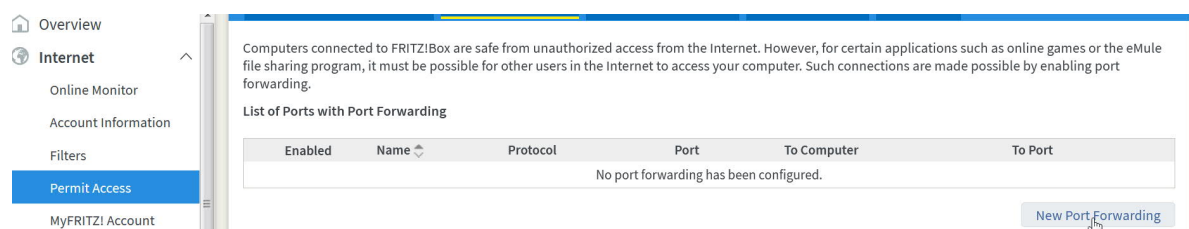
OK

3-Now set up Port Forwarding for Incoming OVPV traffic

On the FRITZ!Box go to the setting Internet / Permit Access / Port Forwarding.



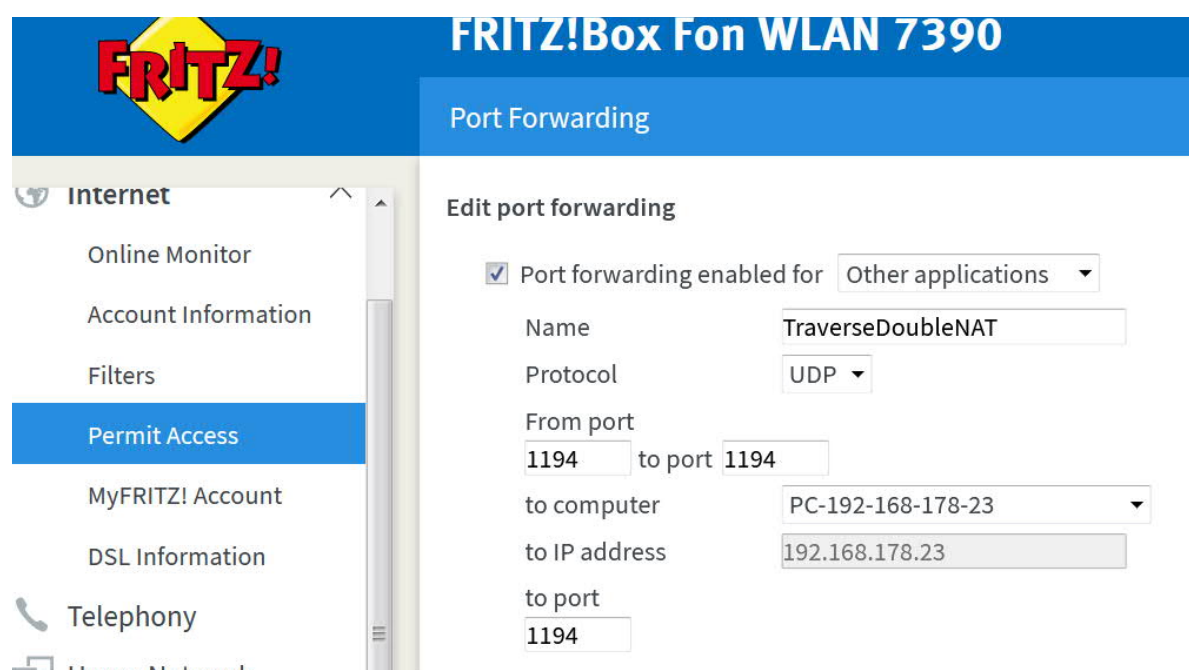
Click the button New Port Forwarding.



Make sure the box "Port forwarding is enabled for" is checked.



In the first drop-down list, instead of "HTTP server" (as shown in the picture above), select "Other applications". This displays additional entry fields further down the screen.



Enter whatever name you like to describe this forwarding rule.

Protocol should be "UDP" (the default used by Asuswrt-Merlin) unless you have changed this in your Asus configuration.

Enter "1194" in the "From port" and "to port" fields. (See note about using non-standard ports below).

"To computer" is the name which the FRITZ!Box has given to your Asus router. As you select this, the IP address automatically changes to the address you reserved in step (2) above.
(Note – the FRITZ!Box incorrectly describes the Asus router as a PC.)

Enter the same "to port" number as the "From port".

Note - The standard port used by OpenVPN is 1194. However this port is scanned regularly from the Internet, by people looking for security vulnerabilities. So you may want to choose a different non-standard port.

If you use a non-standard port, you will have to use this port number on your Asus router (OpenVPN server page), on the FRITZ!Box ASDL modem port forwarding page, and in the client.ovpn configuration file on any client device connecting remotely to your network.

So perhaps it is better first to set up access with the standard port, and when everything is working correctly, then change all port numbers to your chosen non-standard number.

Click "OK" and then click "Apply" on the next screen.

Internet > Permit Access

MyFRITZ! Access Settings | **Port Forwarding** | FRITZ!Box Services | Dynamic DNS | VPN

Computers connected to FRITZ!Box are safe from unauthorized access from the Internet. However, for certain applications such as file sharing programs, it must be possible for other users in the Internet to access your computer. Such connections are made possible through port forwarding.

List of Ports with Port Forwarding

Enabled	Name	Protocol	Port	To Computer	To Port
<input checked="" type="checkbox"/>	TraverseDoubleNAT	UDP	1194	PC-192-168-178-23	1194

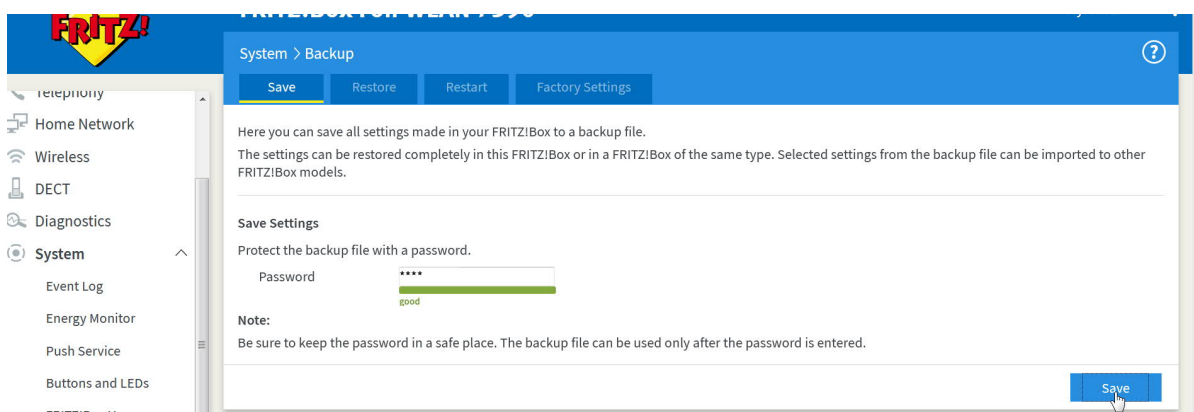
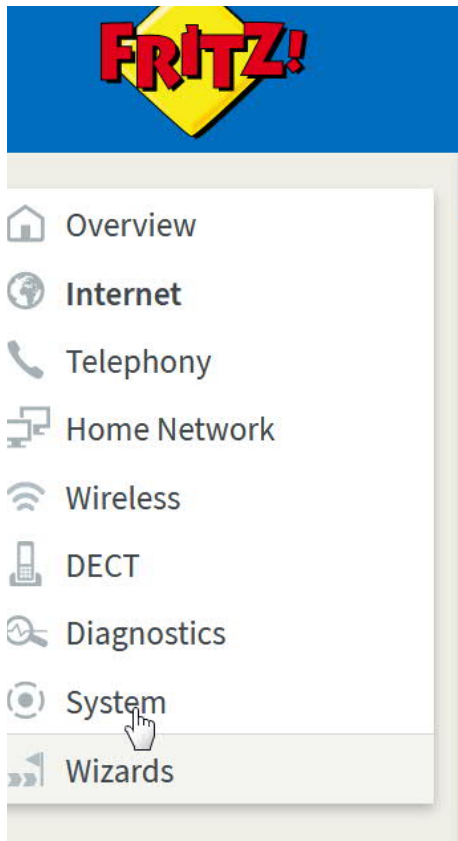
☐ All devices in the home network are allowed to change their own port forwarding settings
Devices like game consoles and applications that support UPnP or PCP can be used to change security settings in the home network. For reasons of security, only enable this option if you really want to allow incoming connections to be managed by the devices themselves.

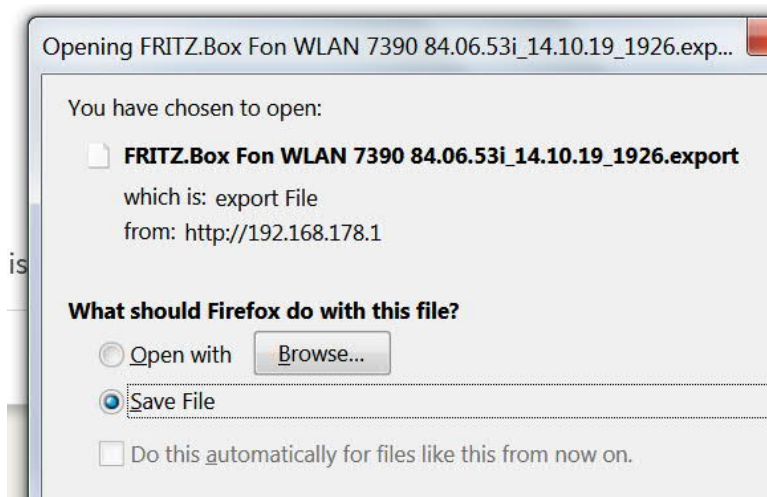
Apply

4-Backup Configuration

The configuration allows easy return to a known configuration if the modem/router loses its configuration.

The backup should be restored only to the same modem/router running the same firmware version.





The Small Print:

This document was created in good faith. But if you decide to follow the steps shown herein, you do so at your own risk. The author of this guide accepts no liability.

All software shown in the screen shots is the property of the respective creators of the software depicted.