FRITZ!Box 3490

Configuration and
Operation

Table of Contents

Security and Handling

Before installing and using the FRITZ!Box, please read the following security and handling instructions.

Safety Instructions

Before connecting the FRITZ!Box 3490, observe the following security instructions in order to protect yourself and the FRITZ!Box from harm.

- Overloaded outlets, extension cords and power strips can lead to fires or electric shocks.
    - Avoid using socket strips and extension cords if at all possible.
    - Do not connect multiple extension cords or socket strips to each other.
- Damage to electric wiring or gas or water pipes during drilling can present a significant danger.
    - Before mounting the FRITZ!Box on the wall, make sure that there are no electrical lines, gas or water pipes located where you need to drill the holes. If necessary, check the site with a pipe detector or consult with qualified experts.
- Heat accumulation can lead to overheating of the FRITZ!Box and subsequently damage the FRITZ!Box.
    - Provide for sufficient air circulation around the FRITZ!Box.
    - Make sure that the ventilation slits on the FRITZ!Box housing are always unobstructed.
    - The FRITZ!Box should not be placed on a carpet or on upholstered furniture.
    - Do not cover the FRITZ!Box.
- The base of the FRITZ!Box can heat up during normal operation. This heat can cause damage to heat-sensitive surfaces.
    - Do not place the FRITZ!Box on heat-sensitive surfaces.

- During electrical storms, lightning and electrical surges present a danger to connected electrical devices.
  - Do not install the FRITZ!Box during an electrical storm.
  - During a storm, disconnect the FRITZ!Box from the power supply and from the DSL or VDSL line.
- Moisture and liquids that find their way into the FRITZ!Box can cause electric shocks or short circuits.
  - Only use the FRITZ!Box indoors.
  - Never let liquids get inside the FRITZ!Box.
- The device contains hazardous components and should only be opened by authorized repair technicians.
  - Do not open the FRITZ!Box housing.

Handling the FRITZ!Box

- Insert the the FRITZ!Box into an electrical outlet that is easy to reach.
- You can place the FRITZ!Box on a horizontal surface or mount it on a wall. For a drilling template to mount the FRITZ!Box on a wall, see page 140.
- Place or hang the FRITZ!Box in a dry location that is free of dust and protected from direct sunlight.
- For ideal operating conditions, mount the FRITZ!Box on a wall with the cables connected on the bottom.
- When connecting the FRITZ!Box to your computer using a network cable, keep in mind that the cable can be no longer than 100 m.
- If you would like to establish wireless connections between the FRITZ!Box and the computer, position the FRITZ!Box at a central location.
- Make sure to keep sufficient distance from potential sources of interference like microwave devices or electric devices with large metal housings.

Conventions in the Manual

This manual uses the following symbols and emphases:

This symbol marks useful hints and tips.

This symbol indicates important instructions that must be observed to avoid malfunctions.

- Quotation marks designate elements and features in the user interface and paths.

    Example

    Select the "Home Network/Smart Home" menu and then click "Register New Device".

- Pointed brackets mark wild cards.

    Example

    Press the keys ✷#‹Seq›. ‹Seq› stands for a keyboard sequence.

- Bold type emphasizes important words.

    Example

    Do **not** leave the page without saving.

- Blue font in the text designates links and references within this manual and addresses to be entered in the browser.

    Example

    See also the information on page 9.

1 The FRITZ!Box 3490

Welcome! We are pleased you decided on a FRITZ!Box. The FRITZ!Box 3490 is the hub of your home network, connecting your computers and network devices with the Internet. You can operate the FRITZ!Box on a DSL or VDSL line as an Internet router.

The FRITZ!Box is equipped with ports for computers and USB devices and supports wireless LAN technology. This means you can use the FRITZ!Box as a wireless access point for wireless devices like note-books, tablets or smartphones.

The FRITZ!Box integrates connected computers and network devices into your private home network. The devices can exchange data with each other and enjoy shared access to USB hard drives, USB printers and other USB devices. The FRITZ!Box transmits music, video and image files to suitable playback devices in the home network.

Settings for the FRITZ!Box and for your private network are configured in a user-friendly user interface. The user interface can be opened in any web browser. Wizards guide you step by step through the most important FRITZ!Box functions.

This manual assists you in connecting, configuring and operating your FRITZ!Box. Its intention is not only to introduce to you the many functions of the device, but also to familiarize you with some of the technical context. Have fun using your FRITZ!Box.

2   Ports, Interfaces, Buttons and LEDs

This chapter describes the ports, interfaces, buttons and LEDs of the FRITZ!Box.

2.1   Ports and Interfaces
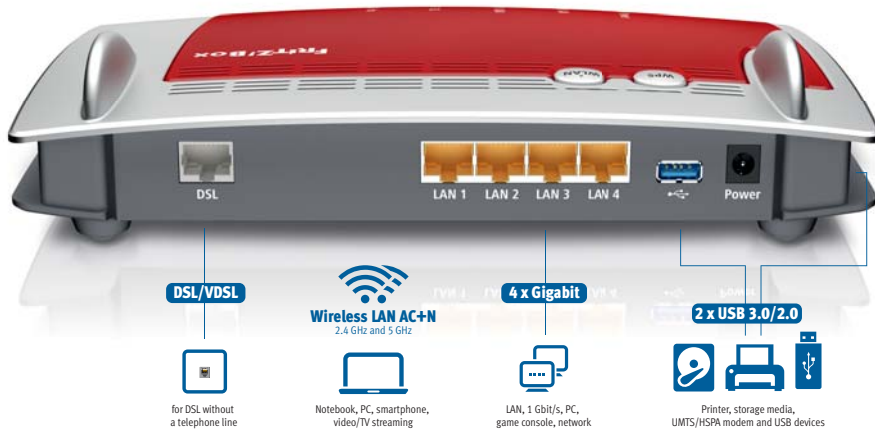
Possibilities for connecting the FRITZ!Box

- **DSL**

  Socket for connecting to ADSL2+ and VDSL

- **LAN 1 – LAN 4**

  4 gigabit Ethernet ports (10/100/1000 Base-T) for connecting computers and other network devices like game consoles and network hubs

- **USB** ⌁

  2 USB 3.0/2.0 ports for connecting USB devices like printers or storage media

- **Wireless access point**

  Integrated wireless access point for connecting to wire-less LAN devices that use the radio standard
  IEEE 802.11a, IEEE 802.11b, IEEE 802.11g or
  IEEE 802.11n (in the 2.4- or 5-GHz frequency band) or
  IEEE 802-11ac

2.2   Buttons

The FRITZ!Box has two buttons on the top of the housing.
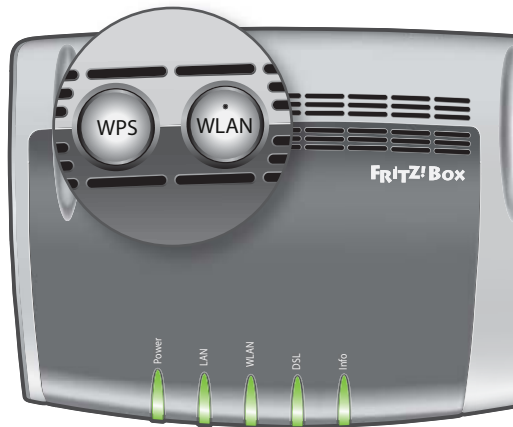
FRITZ!Box buttons

Button Functions

"WLAN" Button

With the "WLAN" button on the FRITZ!Box you can switch the wireless network on and off.

"WPS" Button

With the "WPS" button you can establish a wireless LAN con-nection via WPS; see Establishing a Wireless LAN Connection Using WPS from page 21.

2.3   LEDs

The FRITZ!Box 3490 has five LEDs, which flash or light up to display various connection statuses and events.

LED	Condition	Meaning
Power	on	• Device has electrical power and the DSL line is ready for operation
	flashing	• Device has electrical power and the connection to DSL is being established or has been interrupted
LAN	on	Network connection is active to at least one connected device (network adapter or hub/switch)
WLAN	on	Wireless LAN function is enabled
	flashing	• Switching the wireless LAN function on or off • Adopting the wireless settings • Performing WPS • WPS procedure aborted: More than two wireless LAN devices are performing WPS at the same time. Repeat the WPS procedure.
DSL	on	Internet connection is active
Info	flashing	• Updating FRITZ!OS • Online meter reached the defined value, or another event defined in the user interface under "System / Buttons and LEDs / Info Display" is signaled

3 Before You Connect the FRITZ!Box

- See the information on Security and Handling on page 7.

- Check the contents of your FRITZ!Box package. See page 14 to find out what is included in the package.

- Make sure that the requirements for operating the FRITZ!Box have been met; see page 14.

3.1 Contents of the FRITZ!Box Package

- FRITZ!Box 3490

- one power supply unit

- one network cable

- one DSL cable

- one quick guide

3.2 Requirements for Operation

In order to operate the FRITZ!Box, you must have the following:

- an up-to-date web browser

  Some of the FRITZ!Box functions can be used only with a web browser that supports HTML5, for instance Firefox version 17 or higher, Internet Explorer version 9 or higher, or Google Chrome version 23 or higher.

- a connection to the Internet

  - DSL line with or without a splitter: ADSL/ADSL2/ADSL2+ compliant with ITU G.992.1, ITU G.992.3 or ITU G.992.5 (Annex B or J)

  - or VDSL2 compliant with ITU G.993.2, G.Vector (ITU-G.993.5)

  - or an Internet cable access with cable modem

  - or a USB modem for mobile Internet access (UMTS/HSPA)

  - or another Internet connection

- for the wireless LAN connection to tablets, smartphones and computers:

  Tablets, smartphones or computers that support wireless LAN compliant with IEEE 802.11ac, IEEE 802.11n, IEEE 802.11g, IEEE 802.11a, or IEEE 802.11b. Computers that do not have wireless LAN integrated can be equipped with wireless LAN support by installing a wireless LAN device, like a FRITZ!WLAN USB Stick, for instance.

- for connecting computers using network cables:

  computer with a network port (network adapter standard Ethernet 10/100/1000 Base-T)

4 Connecting the FRITZ!Box

- Before you connect the FRITZ!Box, read the instructions on Security and Handling on page 7.

- Connect the FRITZ!Box to the power supply.

- Connect the FRITZ!Box to your Internet connection.

4.1 Connecting to Electrical Power

Connecting to the power supply

1. Pick up the power supply unit included in the FRITZ!Box package.

   Use only this power supply unit for connecting to electrical power.

2. Connect the power supply unit to the socket on the FRITZ!Box labeled "Power".

3. Plug the other end into an AC power outlet.

The "Power" LED begins flashing after a few seconds to indicate that the FRITZ!Box is ready for operation.

4.2 Connecting to the Internet

The FRITZ!Box can be connected using various types of Internet connections:

- DSL/VDSL line

- Internet cable access using a cable modem

- Internet via mobile network using a UMTS/HSPA modem

- Internet connection of another router

Connecting to the DSL Line

Connecting to a telephone socket

1. Pick up the DSL cable (gray) included in the package.

2. Insert one end of the cable into the socket on the FRITZ!Box labeled "DSL".

3. Connect the other end to the socket on the DSL splitter labeled "DSL" or something similar.

The "Power" LED begins flashing and then lights constantly. The FRITZ!Box is now ready for Internet connections over DSL.

Connecting to the Cable Junction

With an additional cable modem you can also use your FRITZ!Box 3490 on a cable connection. Use a network cable.

1. Connect the free end of the network cable to the LAN (Ethernet) port on the cable modem.

2. Connect the other end of the network cable to the socket on the FRITZ!Box labeled "LAN 1".

3. Connect a computer with the FRITZ!Box either via wireless LAN or using a network cable; see Connecting a Computer with a Network Cable from page 19 and Connecting Computers with the FRITZ!Box over Wireless LAN from page 21.

4. Set up the Internet connection for connections via cable in the FRITZ!Box; see page 39.

Connecting to the Internet via the Mobile Network

If no other kind of Internet connection is available, you can use your FRITZ!Box to connect to the Internet via the mobile communications network. A USB modem for mobile Internet access (UMTS/HSPA) is required for this.

The FRITZ!Box supports UMTS/HSPA modems from various manufacturers.

1. Insert the USB modem into the USB port on the FRITZ!Box.

2. Set up the Internet connection via the mobile communications network; see page 39.

Connecting to a Router or a Network

You can use the FRITZ!Box at an already existing Internet access. To do this the FRITZ!Box is connected to the router or network.

Connecting Using a Network Cable

A network cable is required to connect the FRITZ!Box to a router.

1. Insert one end of the cable into the socket on the " labeled LAN 1FRITZ!Box".

2. Insert the other end of the cable into a network socket on the router or in the network.

Once you have connected a computer to the FRITZ!Box, you can configure the Internet connection as described in section Internet Connection over LAN 1: FRITZ!Box as a Router on page 40.

5 Connecting a Computer with a Network Cable

You can connect computers and other network devices with the FRITZ!Box using a network cable.

5.1 Connecting to the Computer

One computer or other network device can be connected to each LAN port of the FRITZ!Box.
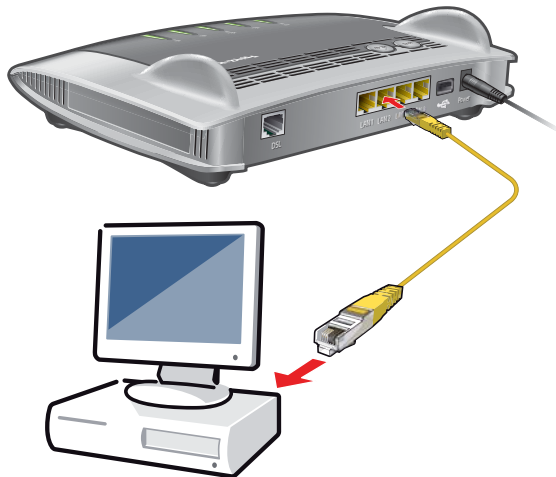
Connecting a computer using a network cable

1. Insert the network cable included in the package into the LAN port of the computer.

   You can also use any other network cable. For more information, see page 131.

2. Insert the free end of the cable into a LAN socket on the FRITZ!Box.

Now the FRITZ!Box and the computer are connected with each other.

5.2 Connecting a Network Hub or Switch

You can connect a network hub or network switch to the FRITZ!Box.
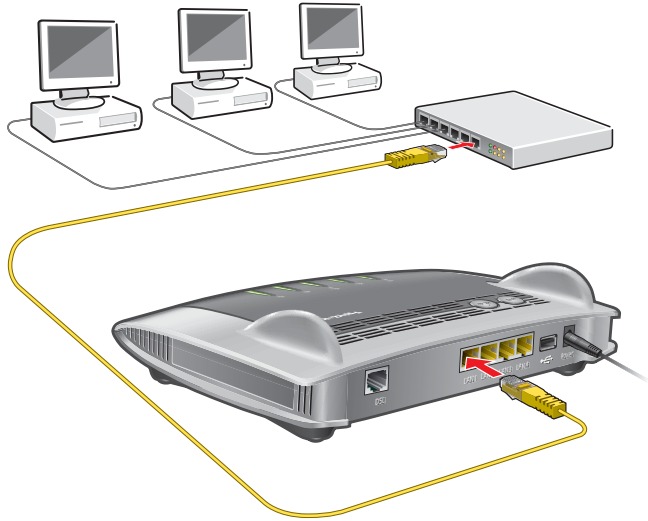
1.   Insert the network cable included in the package into the uplink port of the network hub or network switch.

     You can also use any other network cable. For more information, see page 131.

2.   Insert the free end of the cable into a LAN socket on the FRITZ!Box.

The FRITZ!Box and the network hub are now connected with each other.

6 Connecting Computers with the FRITZ!Box over Wireless LAN

Computers and other devices with wireless LAN, for instance smartphones and network printers, can be connected wirelessly with the FRITZ!Box.

6.1 Procedure for Establishing Secure Wireless LAN Connections

With the following procedure you can establish a secure wireless LAN connection to the FRITZ!Box on a wireless device:

Procedure	Description	Instructions
WPS	The network key of the FRITZ!Box is transmitted to the wireless device automatically. WPS stands for "Wi-Fi Protected Setup".	page 21
Entering a network key	Enter the network key of the FRITZ!Box on the wireless device by hand.	page 24

6.2 Establishing a Wireless LAN Connection Using WPS

With WPS, connecting a wireless device with the FRITZ!Box is quick and easy.

Requirements

The wireless device must support WPS.

Establishing a Connection in Windows 8.1, 8, 7, Vista or XP

Here is how to establish a wireless connection with WPS on a computer with Windows 8.1, 8, 7, Vista or XP:

1. If the "WLAN" LED on the FRITZ!Box is off, press the "WLAN" button briefly.

   The wireless radio network of the FRITZ!Box will be switched on.

2. Open the wireless LAN software on the computer.

   In Windows 8 and 7, for instance, click the wireless LAN symbol [icon] [icon] in the task bar.

3. Select the wireless radio network of the FRITZ!Box.

   The preconfigured name of the wireless LAN radio network is "FRITZ!Box 3490".

4. Click "Connect".

   The field for the network key appears, along with the information that you can establish the connection by pressing a button on the router:
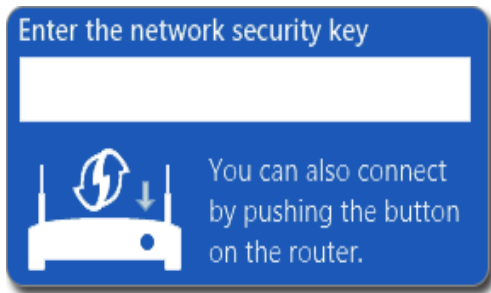
5. For this step you have two minutes: Press the "WPS" button on the FRITZ!Box briefly.
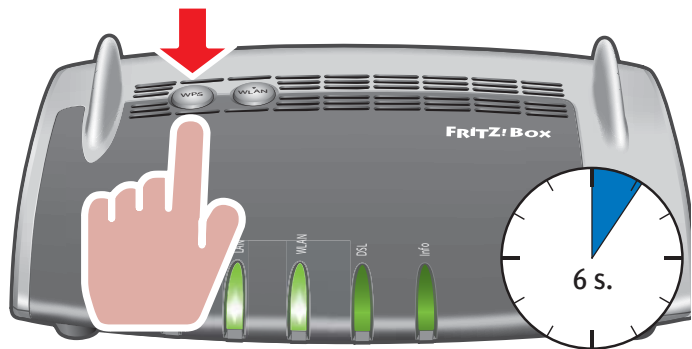
The wireless LAN connection will be established.

Connecting to Other Wireless Devices

Here is how to establish a wireless connection with WPS on a wireless LAN device without Windows:

1. If the FRITZ!Box" LED on the WLAN" is off, press the "WLAN" button briefly.

   The wireless radio network of the FRITZ!Box will be switched on.

2. Use your wireless device to search for wireless networks at your location.

   See the documentation of the wireless LAN device for instructions on how to do this.

3. Select the wireless radio network of the FRITZ!Box and start connecting with WPS.

4. For this step you have two minutes: Press the "WPS "button on the FRITZ!Box briefly.
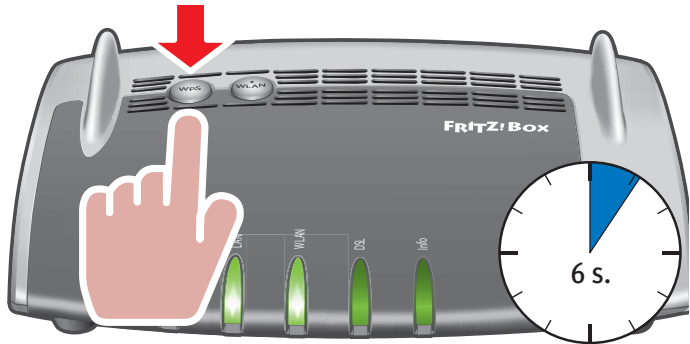
The wireless LAN connection will be established.

6.3   Establishing a Wireless LAN Connection with a Network Key

You can establish a wireless LAN connection by entering the FRITZ!Box network key on the wireless device:

1. If the"WLAN" LED on the FRITZ!BoxWLAN is off, press the "WLAN" button briefly.

    The wireless radio network of the FRITZ!Box will be switched on.

2. Open the wireless LAN software on your wireless device.

    In Windows 8.1, 8 and 7, for instance, click the wireless LAN symbol 📶 📶 in the task bar.

3. Select the wireless radio network of the FRITZ!Box.

    The preconfigured name of the wireless LAN radio network is "FRITZ!Box 3490".

4. Click "Connect".

5. Enter the network key of the FRITZ!Box in the wireless LAN software.

    The preset network key is printed on the underside of the FRITZ!Box housing.

    In the user interface,(see page 25, the network key and additional settings for wireless LAN encryption are found under "WLAN / Security".

6. Confirm your entries.

The wireless LAN connection will be established.

7 The FRITZ!Box User Interface

The FRITZ!Box has a user interface you can open in a web browser on your computer.

In the user interface you can set up the FRITZ!Box, enable or disable functions and receive information on the FRITZ!Box and on your connections.

7.1 Opening the User Interface

The FRITZ!Box user interface can be opened on any computer connected with the FRITZ!Box.

1. Start a web browser on your computer.

2. Enter fritz.box in the address line of the browser.

   The FRITZ!Box user interface opens.

Entering the address fritz.box in the browser

If the user interface does not open, see the instructions on resolving errors in The User Interface Does Not Open from page 119.

7.2 Overview: FRITZ!Box at a Glance

All important information about the FRITZ!Box is displayed directly on the "Overview" page of the FRITZ!Box user interface.

By clicking the linked entries or "more…" you can jump from this page to the corresponding menus and configure settings there.

The "Overview" page of the FRITZ!Box

In the upper area of the window the complete product name of your FRITZ!Box is displayed, along with the currently installed version of FRITZ!OS, and its current energy consumption.

Depending on your settings, the following information is displayed here:

* the name you assigned for your FRITZ!Box; see page 116

* the availability of a new FRITZ!OS version for your FRITZ!Box; see page 37.

The middle area of the window presents information about connections, interfaces, and configured convenience functions.

In the lower area of the window this information is rounded out with the list of connected devices.

7.3   Standard View and Advanced View

Combinations of various settings in the "Internet" and "Home Network" areas can produce a situation in which the user interface of the FRITZ!Box can no longer be opened. Enabling the advanced view in these areas is recommended only if you have advanced network expertise.

The FRITZ!Box user interface has two views: the standard view and the advanced view.

Upon delivery, the FRITZ!Box interface is set to display the standard view. In the standard view all of the settings required for daily operation of the FRITZ!Box are at your disposal. Some pages and areas of the FRITZ!Box user interface are not displayed.

In the advanced view additional settings options appear under various menus and commands. The expanded menu items contain settings for advanced users and are not required for daily FRITZ!Box operation.

Fast Switching between the Views

The "View" link in the footer of the FRITZ!Box allows you to switch instantly between the standard view and the advanced view:

View: Standard
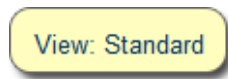
"View" link in the footer

8 Using System Functions of the FRITZ!Box

The FRITZ!Box offers a slew of system functions like notification services, diagnostics functions and updating services, which inform you about the activities and functional status of the FRITZ!Box and help you operate the FRITZ!Box safely and always keep it up to date.

8.1 Diagnostics: Checking FRITZ!Box Functions

With the diagnostics function you can get an overview of the functional status of your FRITZ!Box, its Internet connection and your home network. In the case of an error the diagnostics results can help you localize and remedy any problems.

Start Diagnostics

1. Open the FRITZ!Box user interface; see page 25.

2. Select "System / Diagnostics".

3. Click "Start" to start the diagnostics.

The diagnostics run through the various test areas.

For more information on test areas and test items, as well as on the icons and information in the result of the diagnostics, see the Help on the FRITZ!Box user interface.

Canceling Diagnostics

You can end diagnostics in progress without losing any data.

➡ To end a diagnostics run, click "Cancel".

The results obtained up to that point remain visible.

8.2 Using Energy-Saving Functions of the FRITZ!Box

The FRITZ!Box combines a variety of devices in one device: VDSL and ADSL modem, wireless LAN router and media server. This means that you generally use much less power with the FRITZ!Box than you would with several separate devices.

What is more, the FRITZ!Box saves energy by reducing processing power on standby and lowering the power consumption of idle functions. The FRITZ!Box also offers various settings for energy-saving operation.

The current energy consumption of the total FRITZ!Box system is displayed on the "Overview" page. From there, click with the mouse to view the "Energy Monitor", which displays details on the energy consumption.

Energy-Efficient Operation of the Wireless LAN Radio Network

The WLAN module of the FRITZ!Box works in "Green AP mode". This means it is especially energy-efficient: As soon as no more wireless LAN devices are connected with the FRITZ!Box, the energy consumption of the WLAN module is automatically reduced to a minimum. "Green AP" operation has no effect on the accessibility of the wireless network for wireless LAN devices, since the new registration of a wireless LAN device automatically ends the mode, thus restoring full wireless LAN functionality to the FRITZ!Box.

You can further reduce the power consumption of the radio network by configuring the following settings:

* set up a schedule for the wireless radio network in the "WLAN / Schedule" menu; see

* turn off the wireless radio network whenever no more wireless LAN devices are registered with the FRITZ!Box; see .

Enabling Energy-Saving Mode for USB Hard Drives

In the FRITZ!Box you can enable an energy-saving function for USB hard drives connected to the FRITZ!Box. When the energy-saving function is enabled, connected USB hard drives will be switched off when they are idle—as long as the hard drives support the energy-saving function.

Enable the energy-saving function in the "Home Network / USB Devices" menu in the FRITZ!Box user interface. You can also test here wether your USB hard disk supports the energy-saving function.

Saving Energy at the LAN Ports

For energy-efficient use of your gigabit LAN ports you can specify for each individual LAN port whether it should always operate with full power (power mode) or with reduced energy consumption (green mode). With green mode you can reduce the power consumption of the FRITZ!Box to the level necessary for your applications.

The LAN ports can be configured in the advanced view of the FRITZ!Box user interface; see page 27. In the "Home Network / Network / Network Settings" menu you can select from among the following operating modes in the "LAN Settings" area:

operating mode	Functionality and Power Consumption
Power Mode	In this setting LAN connections are established with a maximum throughput of 1 Gbit/s. Higher power consumption than in green mode if the LAN port is used.
Green Mode	As needed, the FRITZ!Box establishes LAN connections with a data throughput rate of 100 Mbit/s. Lower power consumption than with the "Power Mode" setting.

8.3   Push Services: Notification Services of the FRITZ!Box

Push services are notification services that inform you about the activities of your FRITZ!Box and assist you in saving your passwords and FRITZ!Box settings. With the push services you can have e-mail sent to you at regular intervals informing you about the latest connections, usage and configuration of your FRITZ!Box.

Various push services are available in the user interface under "System / Push Service". There you can select the push service interesting for you and specify which events in the FRITZ!Box you would like to be informed about, how often these e-mails should be sent, and to which e-mail address.

Available Push Services

You can request push service mails about the following FRITZ!Box areas and activities:

Push Service	Information
FRITZ!Box info	Sends you regular e-mail messages with data on FRITZ!Box usage and connections.
Wireless LAN Guest Access	Sends you a message whenever devices register with or deregister from the wireless guest access.
New FRITZ!OS	Notifies you whenever a new FRITZ!Box is available for your FRITZ!OS.
Saving Settings	The settings of your FRITZ!Box are saved automatically and sent to the specified e-mail address before every update and each time the factory settings are restored.
Forgot password	Sends you an access link to the specified e-mail address if you have forgotten your password.
Current IP address	Sends the IP address assigned by the Internet service provider every time the Internet connection is established.

Enabling Push Services

A wizard is available in the FRITZ!Box user interface to guide you step by step through the configuration of push services.

1. Open the FRITZ!Box user interface; see page 25.

2. On the "Overview" page, select the "Wizards" menu.

3. Start the "Configure Push Services" Wizard.

The wizard guides you through the menus and dialogs to enable the push services.

Configuring Push Services

You can adjust the push services to your needs, and also disable any or all push services.

1. Open the FRITZ!Box user interface; see page 25.

2. Select the "System / Push Service / Push Services" menu.

3. To configure a push service, click the "Edit" button.

4. Configure various settings in the details.

   The Help of the FRITZ!Box user interface presents comprehensive information on the settings of each push service.

5. Click "OK" to save your settings.

In the Help of the FRITZ!Box user interface you can find detailed instructions.

8.4   Locking the Buttons on the FRITZ!Box

With the "Keylock" function in the "System / Buttons and LEDs" menu you can lock the buttons on your FRITZ!Box. Locking the keys prevents the settings for your FRITZ!Box or your home network from being changed unintentionally or without authorization.

Example

With the "WLAN" button the wireless network of the FRITZ!Box can be switched off at the touch of a button. If this happens by accident, in some cases it may take some time before the cause is found and the wireless LAN radio network can be restored to all FRITZ!Box users in the home network.

Enabling the Keylock

➡   Enable the setting "Buttons locked".

Disabling the Keylock

➡   Disable the setting "Buttons locked".

8.5   Saving and Restoring the FRITZ!Box Settings

All of the settings you configure in the FRITZ!Box can be saved in a backup file. With this file you can restore your settings at any time:

- in the same FRITZ!Box or another FRITZ!Box of the same model

- in a different FRITZ!Box model.

  In this case you can select which settings are to be applied to the FRITZ!Box.

Saving Settings

Backup files that are not protected by assigning a password are a security risk. Protect your backup file with a password to avoid security problems.

A wizard is available in the FRITZ!Box user interface to assist you in saving your FRITZ!Box settings, which guides you through the process step by step.

1. Open the FRITZ!Box user interface; see page 25.

2. On the "Overview" page, select the "Wizards" menu.

3. Start the "Save and Restore Settings" Wizard.

4. In the next window, select the "Save settings" options and then click "Next".

The wizard guides you through the menus and dialogs to save your settings.

Restoring Settings

With the "Restore" function in the "System / Backup" you can have all settings from a backup file you created with this or another FRITZ!Box loaded in full to your FRITZ!Box. Your current FRITZ!Box settings will be overwritten by this function.

You can use the following backup files to restore settings:

- Backup files created with the same FRITZ!Box.

  If you apply settings from a backup file created with the same FRITZ!Box, all settings will be restored in full.

- Backup files created with a different FRITZ!Box of the same model.

  If you apply settings from a backup file that was created with a different FRITZ!Box of the same model, then you can restore all settings if the backup file was protected with a password.

- Backup files created with a different FRITZ!Box model.

  If you apply settings from a backup file that was created with a FRITZ!Box of a different model, then you can restore several selected settings to your FRITZ!Box.

A wizard is available in the FRITZ!Box user interface to assist you in restoring your FRITZ!Box settings, which guides you through the process step by step.

1. Open the FRITZ!Box user interface; see page 25.

2. On the "Overview" page, select the "Wizards" menu.

3. Start the "Save and Restore Settings" Wizard.

   Your current FRITZ!Box settings will be overwritten by the settings in the backup file.

4. In the next window, select the "Restore settings" options and then click "Next".

The wizard guides you through the menus and dialogs to restore your settings.

8.6   Update: Updating FRITZ!OS

Always install the latest version of FRITZ!Box on all FRITZ! products in your FRITZ!OS home network. This keeps your FRITZ! products up to date and ensures optimum synchronization of all devices in your home network.

AVM provides regular free updates for your FRITZ!Box. This software—called FRITZ!OS—controls all of the FRITZ!Box functions. Updates provide for maximum security for your FRITZ!Box, contain further developments of existing FRITZ!Box functions and often also introduce new functions for your FRITZ!Box.

Performing an Update with the Wizard

A wizard is available in the FRITZ!Box user interface to assist you in updating your FRITZ!Box. The wizard checks whether an update of the FRITZ!OS is available for your FRITZ!Box and guides you step by step through installation.

Performing the Update

1. Open the FRITZ!Box user interface; see page 25.

2. On the "Overview" page, select the "Wizards" menu.

3. Start the "Update" wizard.

   The Wizard checks whether a FRITZ!OS update is available for your FRITZ!Box.

   If the Wizard finds an update, it displays the version number of the new FRITZ!OS. Click the link under the FRITZ!OS version to view information about further developments and new functions contained in the FRITZ!OS update.

Interrupting the FRITZ!OS update could damage your FRITZ!Box. Do not clear the connection between FRITZ!Box and the computer during a FRITZ!OS update, and do not unplug the power cord.

4. To transfer the FRITZ!OS update to the FRITZ!Box, click "Start Update Now".

   The FRITZ!OS update begins and the "Info" LED on the FRITZ!Box starts flashing.

The FRITZ!OS update is complete when the "Info" LED stops flashing.

Performing a Manual Update

In some cases it is not possible to perform an automatic update, for instance when the FRITZ!Box is not connected to the Internet. Then you have the option of performing an update manually.

Downloading the FRITZ!OS File

Before you can perform a manual update, you must download an up-to-date FRITZ!OS file from the Internet (using your neighbor's or friend's computer, or at an Internet café) and save it on your computer or on a connected storage medium.

1. Enter the address ftp://ftp.avm.de/fritz.box/ in your web browser.

2. Switch to the folder for your FRITZ!Box model, then to the sub-folder "firmware", and then to the folder named "english".

   The complete model name of your FRITZ!Box is shown in the user interface on the "Overview" page and is also printed on the sticker on the underside of the housing.

3. Download the latest FRITZ!OS file for your FRITZ!Box with the file extension ".image" to the computer.

   The currently installed version of FRITZ!OS is displayed on the "FRITZ!OS File" tab and on the "Overview" page. The version number of the FRITZ!OS you downloaded and saved is included in the name of the "*.image" file. Perform an update only if the downloaded FRITZ!OS is a newer version than the FRITZ!OS currently installed.

Now you can copy the FRITZ!OS file to the computer that is connected to the FRITZ!Box, for instance using a USB flash drive.

Performing a FRITZ!OS Update

1. Open the FRITZ!Box user interface; see .

2. Enable the advanced view.

3. Select "System / Update / FRITZ!OS File".

4. Click the button "Save Settings" to save the current settings of your FRITZ!Box on your computer and save the export file on your computer.

    Using this file you can restore the settings of your FRITZ!Box as needed.

5. Click the "Browse..." button and choose the file with the new FRITZ!OS you already downloaded and saved on your computer.

    Interrupting the FRITZ!OS update could damage your FRITZ!Box. Do not clear the connection between FRITZ!Box and the computer during a FRITZ!OS update, and do not unplug the power cord.

6. Click the "Start Update" button.

    The new FRITZ!OS is transmitted to your FRITZ!Box.

The update is complete when the "Info" LED stops flashing.

Using the Automatic Search for Updates

With the AVM service "Search for updates automatically" you will always be informed about the latest FRITZ!OS updates for your FRITZ!Box: When a new FRITZ!OS for your FRITZ!Box was found, you will be notified on the "Overview" page. From here you can then install the FRITZ!OS update; new updates will not be installed automatically.

The service "Search for updates automatically" is enabled upon delivery of the FRITZ!Box, but you can disable it if desired. The settings for this service are located in the "Contents / AVM Services" area on the FRITZ!Box.

9 Configuring an Internet Connection in the FRITZ!Box

Once you have connected the FRITZ!Box to your Internet connection, you must configure the Internet connection in the FRITZ!Box user interface so that the FRITZ!Box can establish the connection to your Internet service provider and connect to the Internet.

The sequence and number of steps required to configure your Internet connection depend on the kind of connection, the desired operating mode, and the Internet service provider.

9.1 Internet Connection for DSL

Enter the Internet account information you received from your DSL/Internet service provider. These data are required to configure the Internet connection.

Your Internet service provider also supplied information about the configuration of your Internet connection. Always perform the Internet connection setup as described by your provider.

Configuring Your Internet Connection Automatically

If your Internet service provider arranges for the service of automatically configuring your Internet connection, the automatic configuration will be performed right after the FRITZ!Box is connected. No additional settings for the Internet connection have to be configured in the FRITZ!Box. To start automatic configuration, some providers require that you enter a start code.

Configuring the Internet Connection Using the Wizard

1. Open the FRITZ!Box user interface; see .

2. Select the "Wizards" entry in the menu.

3. Click the "Check Internet Connection" Wizard and follow the instructions.

When the Wizard is finished, your Internet connection has been configured.

Configuring Your Internet Connection Without the Wizard

Choose this method if the FRITZ!Box is connected to a DSL modem or a DSL router, or integrated into an existing network.

1. Open the FRITZ!Box user interface; see page 25.

2. Switch to the advanced view; see page 27.

3. Select the "Internet / Account Information" menu and enter your account information.

4. Click "Apply" to save your entries.

In the Help of the FRITZ!Box user interface you can find detailed instructions.

9.2 Internet Connection for Cable

With an additional cable modem you can also use your FRITZ!Box 3490 on a cable connection. The Internet connection then will be established and controlled by the FRITZ!Box. In this operating mode all FRITZ!Box functions (like Internet telephony, firewall) are available without restriction.

1. Open the FRITZ!Box user interface; see page 25.

2. Select the "Wizards" entry in the menu.

3. Click the "Check Internet Connection" Wizard and follow the instructions.

9.3 Internet Connection for the Mobile Network

With a USB modem you can also establish the Internet connection with your FRITZ!Box 3490 via the mobile communications network. A USB modem for mobile Internet access (UMTS/HSPA) and a SIM card from a mobile communications provider are required for this. The FRITZ!Box supports UMTS/HSPA modems from various manufacturers.

1. Insert the USB modem in the USB port on the FRITZ!Box.

2. Open the FRITZ!Box user interface; see page 25.

3. Select the "Internet / Mobile Communications" menu.

    The "Mobile Communications" menu is not available until the UMTS/HSPA modem has been connected to the USB port of the FRITZ!Box.

4. Select the setting "Mobile connection enabled".

5. Configure the settings for your Internet connection over the mobile communications network. In the Help of the FRITZ!Box user interface you can find detailed instructions.

When the mobile communications function is used, the FRITZ!Box user interface presents information about network availability, connection status and throughput.

Once this function has been set up, the "Internet / Mobile Communications" menu is always available, even when the USB modem has been disconnected.

Due to technical limitations on the part of the mobile communications network providers, some limitations may arise for Internet telephone calls and for applications requiring an incoming connection. This is also true for using port forwarding, releasing USB storage media for sharing, remote maintenance over HTTPS, Dynamic DNS and VPN. Contact your network provider for details on any restrictions that may apply.

9.4   Internet Connection over LAN 1: FRITZ!Box as a Router

You can use the FRITZ!Box at an already existing Internet access via the LAN 1 socket. To do this the FRITZ!Box is connected to the router or network. For this kind of connection the FRITZ!Box can be configured as an independent router or as an IP client in the existing network.

Configuring FRITZ!Box as a Router

You can configure the FRITZ!Box to work as an independent router to provide a network with its own network address range.

1. Connect the FRITZ!Box to the router or network with a network cable; see Connecting to a Router or a Network on page 18.

2. Open the FRITZ!Box user interface; see page 25.

3. Select the "Internet / Account Information" menu.

4. Select the "Existing connection over LAN" entry from the "Internet service provider" drop-down list.

5. Click "Apply".

The FRITZ!Box is configured as a router and the network range is changed automatically.

The FRITZ!Box, along with the connected network devices, forms its own self-contained network.

Configuring FRITZ!Box as an IP Client

You can configure the FRITZ!Box such that it is integrated into the existing network as an IP client and shares the existing Internet connection in the network.

1. Connect the FRITZ!Box to the router or network with a network cable; see Connecting to a Router or a Network on page 18.

2. Open the FRITZ!Box user interface; see page 25.

3. Select the "Internet / Account Information" menu.

4. Select the "More Internet service providers" entry from the "Internet service provider" drop-down list.

5. Select the "Other Internet service provider" entry from the second drop-down list.

6. From the "Connection" area, select the "External modem or router" option.

7. In the "Operating Mode" area, select the setting "Share existing Internet connection in the network (IP client mode)".

The FRITZ!Box is integrated into the existing network as an IP client. The FRITZ!Box and the connected network devices receive an IP address from the IP address range of the existing network. The FRITZ!Box and the connected network devices are thus part of this network.

9.5 Surfing the Net

1. Start a web browser on your computer.

2. Enter in the address field the URL of the web page you would like to visit, for instance avm.de/en.

The requested Internet page is opened and displayed.

10   Password Protection: Using FRITZ!Box Safely

Password protection for access to the user interface is a security fea-
ture of your FRITZ!Box. This section describes how to use a password
for the FRITZ!Box user interface and why you should use password
protection.

For additional security information on using the FRITZ!Box, see the
AVM website at en.avm.de/guide/security.

10.1   Login with Password: FRITZ!Box Procedures

The FRITZ!Box offers two ways to configure password protec-
tion:

- FRITZ!Box password
- FRITZ!Box user

The two login methods have the following properties:

Property	FRITZ!Box password	FRITZ!Box user
Password	There is a password needed to open the FRITZ!Box user inter-face.	There are user accounts. Every FRITZ!Box user receives her or his own password for opening the user interface.
Scope of access	With the FRITZ!Box password, access to all contents and set-tings in the FRITZ!Box is per-mitted.	For each FRITZ!Box user, in the user account you define which contents and settings of the FRITZ!Box the given user is al-lowed to access.
Kind of access	Login to the user interface is permitted from devices located in the home network of the FRITZ!Box.	A FRITZ!Box user can also log in to the FRITZ!Box user inter-face—with the appropriate us-er rights—from the Internet.

For instructions on configuring the FRITZ!Box password, see
the section Using a FRITZ!Box Password from page 44.

For instructions on configuring FRITZ!Box users, see the sec-
tion Using FRITZ!Box Users from page 46.

Password Tips

- Select a password with at least eight characters, which includes capitals and lower-case letters as well as numerals and special characters.

  See "Characters for Passwords" in the Help of the FRITZ!Box user interface for more information about which characters you're allowed to use.

- Be sure to keep your passwords in a safe place!

  - Use the "Forgot password" push service, see Push Services: Notification Services of the FRITZ!Box from page 30. When you have forgotten a password, the FRITZ!Box sends you an access link to the e-mail address you specified. You can assign a new password using this link. In this case the settings of your FRITZ!Box remain intact.

  - Otherwise—if you lose your FRITZ!Box password—you will have to restore the factory settings to the FRITZ!Box and reconfigure all of the personal settings for your Internet connection, your telephone system and your home network; see page 53.

- Recommendations for secure passwords (keys) are also available on the Federal Office for Information Security (Bundesamt für Sicherheit in der Informationstechnik) website.

10.2 Using a FRITZ!Box Password

The basic method of logging in to the FRITZ!Box user interface is to enter the FRITZ!Box password. With this password all users can open the user interface and access all of the FRITZ!Box's contents and settings.

Configuring the FRITZ!Box Password

1. In the FRITZ!Box user interface, open the "System / FRITZ!Box Users / Login to Home Network" menu.

2. Select the option "Login with the FRITZ!Box password".

3. In the "FRITZ!Box password" field, enter the password you specified.

   For more information on the characters you may use for the password, see the Help in the FRITZ!Box user interface.

4. Save your changes by clicking "Apply".

   You will be directed to the welcome screen of your FRITZ!Box.

5. Enter your user name to log in to the user interface of your FRITZ!Box.

Password protection is enabled in your FRITZ!Box.

With the FRITZ!Box password it is not possible to access the FRITZ!Box from the Internet. For users who require access to the FRITZ!Box via Internet, you must also set up an account as a FRITZ!Box user; see page 46.

Quick Access to the Login Data

As soon as you have configured the FRITZ!Box password, the upper navigation bar of the FRITZ!Box user interface will display the entry "Logged in".
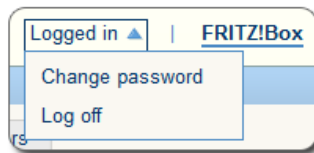
Click the blue triangle to control basic functions of your FRITZ!Box log in:

- **Change Password**

  Using the "Change password" entry you can change the FRITZ!Box password.

- **Log Off**

  Click "Log Off" here to leave the FRITZ!Box user inter-
  face.

  Log off of the FRITZ!Box user interface before you surf the
  web with your browser. If you do not click on the
  FRITZ!Box user interface for a period of longer than sixty
  minutes, you will be logged off automatically.

10.3   Using FRITZ!Box Users

If you would like to access your FRITZ!Box from the Internet,
you have to configure password-protected login with
FRITZ!Box user accounts. Also use this login method if multi-
ple users with different rights are to have access to the
FRITZ!Box.

A FRITZ!Box user opens the user interface of the FRITZ!Box by
entering her or his personal password. There she or he can
view and change those contents or settings for which she or
he has been granted access rights.

Configuring FRITZ!Box Users

You can set up as many as 18 user accounts in the FRITZ!Box.

Before you can select the "Login with FRITZ!Box user name
and password" method in the "System / FRITZ!Box Users /
Login to Home Network" menu, you have to set up a FRITZ!Box
user with the right to access the "FRITZ!Box Settings".

Creating a FRITZ!Box User with the Right to Access Settings

1.   In the FRITZ!Box user interface, open the "System /
     FRITZ!Box Users / User" menu.

2.   Click the "Add User" button.

3.   Enter a name, a valid e-mail address and a password for
     the new user.

     For more information on the characters you may use for
     the password, see the Help on the FRITZ!Box user inter-
     face.

4. Specify whether or not the new FRITZ!Box user is allowed to access from the Internet the FRITZ!Box contents for which she or he has access rights.

    Keep in mind that in order to access the FRITZ!Box from the Internet, a corresponding service must also be enabled in the FRITZ!Box. For information on how to do this, see the section Accessing the FRITZ!Box from the Internet from page 50.

5. In the "Rights" area, specify for each FRITZ!Box user which FRITZ!Box contents she or he is allowed to use.

    Make sure that those users who are allowed to configure settings on the FRITZ!Box are assigned at least the right "FRITZ!Box settings".

    For more information on rights, see the section from page 49.

6. Save your entries by clicking "OK".

    The FRITZ!Box user account has been set up.

    If you would like to use user accounts to log into the FRITZ!Box from the home network as well, also perform the following two steps:

7. Switch to the "Login to Home Network" tab and select the "Login with FRITZ!Box user name and password" option. Confirm your selection by clicking "Apply".

    You will be directed to the welcome screen of your FRITZ!Box.

8. Select your user name and enter the corresponding password to log in to the user interface of your FRITZ!Box.

The password protection for your FRITZ!Box is enabled as soon as you configure the first user who is allowed to make settings on the FRITZ!Box. Now you can set up more users.

Setting Up More FRITZ!Box Users

1. In the FRITZ!Box user interface, open the "System / FRITZ!Box Users / User" menu.

    A list of the FRITZ!Box user accounts is displayed. Click the button after each list entry to view, change [icon], or delete [icon] the corresponding user account.

2. Click the "Add User" button.

3. Enter a name, a valid e-mail address and a password for the new user.

    For more information on the characters you may use for the password, see the Help on the FRITZ!Box user interface.

4. Specify whether or not the new FRITZ!Box user is allowed to access from the Internet the FRITZ!Box contents for which she or he has access rights.

    Keep in mind in order to access the Internet, a corresponding service must also be enabled in the FRITZ!Box. For information on how to do this, see the section Accessing the FRITZ!Box from the Internet from page 50.

5. In the "Rights" area, specify for each FRITZ!Box user which FRITZ!Box contents she or he is allowed to use.

    For more information on rights, see the section from page 49.

6. Save your entries by clicking "OK".

The FRITZ!Box user account has been set up.

Do not create any user accounts for temporary users (like weekend guests, for example) whom you would like to grant Internet access over your FRITZ!Box temporarily. Use the guest access of the FRITZ!Box over wireless LAN instead; see page 117.

Rights for FRITZ!Box Users

The rights define which contents of the FRITZ!Box a FRITZ!Box user is allowed to access.

The rights checked in the user account are granted to the FRITZ!Box user for access from the home network and—if enabled—also for access from the Internet; see .

You can grant the following rights:

- **FRITZ!Box settings**

  A user with these rights can open the fritz.box or myfritz.box view of the FRITZ!Box user interface. Here she or he can see and edit all settings. Configuration rights automatically include the right to access voice messages, faxes, FRITZ!App Fon and the call list as well as the right to control Smart Home devices.

  A registered user cannot revoke these rights herself or himself and cannot disable her or his own account.

- **Voice messages, faxes, FRITZ!App Fon and call list**

  A user with these rights can open the myfritz.box view. There she or he can view faxes, the call list, FRITZ!App Fon, and listen to voice messages.

- **Access to NAS contents**

  A user with this right can open the FRITZ!Box user interface fritz.nas. Here she or he can view the contents for which she or has read rights and—if she or he has write rights as well—edit these contents.

  Access to NAS contents can be granted for all storage media available on the FRITZ!Box or for one selected directory.

- **VPN**

  A user with this right can use her or his mobile device or computer to establish a safe VPN connection to the FRITZ!Box and its home network.

Accessing the FRITZ!Box from the Internet

To be able to access your FRITZ!Box from the Internet, the following conditions must be fulfilled:

- You have set up an account with the MyFRITZ! service; see page 55. Your FRITZ!Box is registered with this My-FRITZ! account.

- The option "Access from the Internet allowed" is enabled in your user account.

- The option "Internet access to the FRITZ!Box via HTTPS enabled" is selected in the "Internet / MyFRITZ!" menu, or enabled in the "Internet / Permit Access / FRITZ!Box Services" menu.

  When the MyFRITZ! service is enabled this check mark is set automatically.

A FRITZ!Box user who has been granted Internet access can use the MyFRITZ! (myfritz.net) service to access the corresponding FRITZ!Box from any location. From the Internet she or he can reach only those FRITZ!Box contents she or he can also access from the home network.

For more information about MyFRITZ!, see the chapter MyFRITZ!: Accessing the FRITZ!Box from Anywhere from page 55.

For more information about HTTPS, see the chapter Access from the Internet via HTTPS, FTP and FTPS from page 73.

How to Use FRITZ!Box User Accounts

- As a FRITZ!Box user with all rights, you can control and configure your FRITZ!Box at home from anywhere, and also view contents and download what you need.

- If you set up a FRITZ!Box user account for every member of the family, with at least the rights to access voice messages, faxes, FRITZ!App Fon and the call list, the entire family can check the answering machine or view the call list even when they're away from home.

- With a FRITZ!Box user account that has only the right to access a certain area of the NAS, you can grant your friends Internet access to your latest vacation pictures, for instance.

Preconfigured FRITZ!Box User: ftpuser

The first time you open the overview of user accounts under "System / FRITZ!Box Users / Users", the user "ftpuser" is already listed.

This is because the FRITZ!NAS service, in which the storage media connected with the FRITZ!Box are summarized, can also be accessed over the protocols SAMBA and FTP. If you access FRITZ!NAS via Windows file sharing or an FTP client, your users must be authenticated by entering "ftpuser".

The preconfigured user account ensures smooth access to FRITZ!NAS over SAMBA and FTP. Therefore it is important not to delete or rename this user.

If you use only the login method with FRITZ!Box user name and password to access your FRITZ!Box, you can also set up a user account with NAS access rights.

You can delete the preconfigured ftpuser account only if you "always" use your FRITZ!Box user account to access the FRITZ!Box, be it from home or via the Internet. In every other case deleting this user account will make it impossible to use the NAS services of the FRITZ!Box, or allow only restricted use.

Quick Access to Your Own User Account

The upper navigation bar of the FRITZ!Box shows the name of the FRITZ!Box user account with which the user is currently logged in to the user interface.
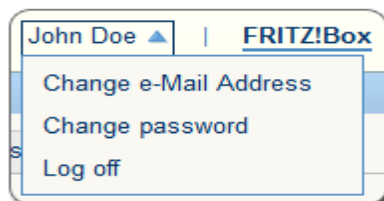
Click the blue triangle to control basic functions of this user account:

- **Change e-mail address**

  Select the "Change e-mail address" entry to assign a different e-mail address to the current user account.

- **Change Password**

  With the "Change password" entry you can change the password of the current user account.

- **Log Off**

  Click "Log Off" here to leave the FRITZ!Box user interface.

  Log off of the FRITZ!Box user interface before you surf the web with your browser. If you do not click on the FRITZ!Box user interface for a period of longer than sixty minutes, you will be logged off automatically.

Disabling FRITZ!Box Users

You can disable a user account without deleting it. The owner of a disabled account can no longer access the FRITZ!Box contents.

You can neither delete nor disable the user account with which you are currently logged in to the user interface of your FRITZ!Box.

1. In the FRITZ!Box user interface, open the "System / FRITZ!Box Users / User" menu.

2. Click the "Edit" button for the user account to be disabled.

3. In the "User" area, remove the check mark in front of the "User account enabled" option.

4. Apply the change by clicking "OK".

The user account has been disabled.

10.4   Forgot Password—What to Do

If you have forgotten your password for the user interface, for reasons of security, you have to restore the factory settings to your FRITZ!Box. You can avoid this by enabling the "Forgot password" push service when you configure your FRITZ!Box.

Using the "Forgot Password" Push Service

With the push service functions you can have the FRITZ!Box send you messages to a specified e-mail address. This kind of notification is available for various FRITZ!Box functions; see Push Services: Notification Services of the FRITZ!Box from page 30.

When you enable the password protection of your FRITZ!Box, it is a good idea to enable the "Forgot password" service in the "System / Push Service" menu.

If you have forgotten your password, the FRITZ!Box sends you an access link by e-mail. You can assign a new the password using this link. The settings of your FRITZ!Box remain intact.

Restoring Factory Settings to the FRITZ!Box

Without a password for the user interface you have to restore the factory settings to the FRITZ!Box. This means that all of your settings will be discarded. Afterwards you will have to re-configure your Internet connection and all personal network and network device settings.

Here is how to restore the factory settings of the FRITZ!Box:

1.   Disconnect the FRITZ!Box from the power supply.

2.   Reconnect to the power supply after about five seconds and wait until the "Power" LED lights up.

      In the first ten minutes after restarting you can restore the factory settings to the FRITZ!Box.

3.   Open the browser on a computer connected with the FRITZ!Box by LAN or wireless LAN and enter fritz.box in the address field.

4. In the "Welcome to your FRITZ!Box" window, click "Forgot your password?" underneath the password query and follow the instructions on the screen.

   The FRITZ!Box is reset to the factory settings and then restarted. Afterwards you can once again access the FRITZ!Box user interface.

5. After restarting, reconfigure the FRITZ!Box over the user interface or load your saved settings to the FRITZ!Box; see page 33.

This concludes the reset of the FRITZ!Box.

10.5 "No login" Mode

From within the home network you can operate the FRITZ!Box user interface without enabling password protection. This means that every user who accesses the interface of your FRITZ!Box can view and change all information and settings.

In the "No login" mode, your private information is not sufficiently protected from malicious programs or unwelcome activities. Therefore we urgently advise against using the FRITZ!Box without password protection!

Protect your FRITZ!Box by defining a password for the FRITZ!Box user interface. To do this, go to the "System / FRITZ!Box Users / Login to Home Network" menu and select one of the password protection methods.

For comprehensive information about logging in to the FRITZ!Box with a password, see the sections Using FRITZ!Box Users from page 46 and Using a FRITZ!Box Password from page 44.

11 MyFRITZ!: Accessing the FRITZ!Box from Anywhere

MyFRITZ! is a web service from AVM, with which you can access your FRITZ!Box from anywhere in the world over the Internet, just as if you were at home. This chapter describes what MyFRITZ! does and how to configure MyFRITZ!.

Why MyFRITZ!?

Using an active Internet connection on any computer, tablet or smartphone, with MyFRITZ! accessing your FRITZ!Box from anywhere is safe and simple. The following areas of your FRITZ!Box are accessible:

- FRITZ!NAS: Photographs, music and documents located on the storage media connected to the FRITZ!Box are available anywhere via MyFRITZ!.

  With MyFRITZ! and FRITZ!NAS your FRITZ!Box offers a "personal cloud service" in which all of your data are located safely at home. Data transmission is encrypted; see page 60.

- FRITZ!Box user interface: With MyFRITZ! you can open the user interface of your FRITZ!Box from anywhere and configure settings.

Exactly which data are available to you depends on the rights set in your FRITZ!Box user account; see page 49.

11.1 Configuring MyFRITZ!

The MyFRITZ! service can be used only with a MyFRITZ! account. Register your MyFRITZ! with this FRITZ!Box account.

Once your FRITZ!Box is registered with your MyFRITZ! account, the FRITZ!Box determines the public IP address each time it is changed and conveys it to the MyFRITZ!. The FRITZ!Box can be reached at this IP address in the Internet from anywhere in the world. When you log in to MyFRITZ! you will be forwarded to the FRITZ!Box using the IP address.

Creating a MyFRITZ! Account

To set up a MyFRITZ! account, use a computer that fulfills the following requirements:

- The computer is connected with the Internet.

- You can access your e-mail on this computer.

Set up the MyFRITZ! account in the FRITZ!Box user interface:

1. Open the FRITZ!Box user interface; see page 25.

2. Select "Internet / MyFRITZ!".

3. Select "Create a new MyFRITZ! account".

4. Enter your e-mail address.

    If you are already configured as a FRITZ!Box user (see page 46), enter here the e-mail address you use for the user account.

5. Assign a MyFRITZ! password that's easy for you to remember. Also note the additional password tips in the section Login with Password: FRITZ!Box Procedures from page 43.

    When a password is defined it is displayed in clear text. Once it has been saved, every time it is entered it will be displayed encoded.

6. If you do not have a FRITZ!Box user account yet, you will be prompted to set one up by assigning a user name and an additional password.

    If you already have a FRITZ!Box user account, follow the instructions in the FRITZ!Box user interface.

    For security reasons, access to the FRITZ!Box from the Internet is possible only for users with a FRITZ!Box user account.

7. You receive an e-mail from MyFRITZ! containing a registration link. If possible, open the e-mail on the computer on which you began setting up the account. Click the registration link.

8. You are forwarded to the MyFRITZ! website, where you are prompted to read the terms of use and activate the account.

Once the account has been activated successfully, you will end up back on your FRITZ!Box user interface.

Now the FRITZ!Box is registered with your MyFRITZ! account. On the MyFRITZ! page of the FRITZ!Box user interface the options "MyFRITZ! enabled for this FRITZ!Box" and "Internet access to the FRITZ!Box via HTTPS enabled" are selected.

Click "Refresh status" if the status of your MyFRITZ! account is marked with a red icon.

11.2 Using MyFRITZ!

As soon as you have created a MyFRITZ! account and registered your FRITZ!Box with the account, you can begin using the MyFRITZ! service.

You can reach your FRITZ!Box from anywhere by opening the myfritz.net website in any web browser.

If you use a smartphone or a tablet, the MyFRITZ!App from AVM offers you simple access to your FRITZ!Box at home.

MyFRITZ! in the Web Browser

1. Open the myfritz.net website.

2. Log in with your e-mail address and your MyFRITZ! password.

3. Click the "To My FRITZ!Box" button.

4. To register with your FRITZ!Box, enter the data of your FRITZ!Box user account.

You will be directed to the MyFRITZ! page of your FRITZ!Box.

Here you have access to the FRITZ!Box contents that are released for sharing in your FRITZ!Box user account; see .

MyFRITZ! over a Smartphone or Tablet

With the MyFRITZ!App from AVM you can use the MyFRITZ! web service on the following devices:

- Android smartphones or Android tablets with Google Android 2.2 or later

- iPhone (model 3GS or later) or iPod touch (3rd generation or higher) or iPad with iOS 5.0 or later

The MyFRITZ!App is available in the Google Play Store and the Apple App Store.

For more information on the apps from AVM, go to en.avm.de/products/fritzapps.

During configuration, your smartphone or tablet must be connected with the FRITZ!Box over wireless LAN. After setup you can use the MyFRITZ!App no matter whether you're at home or on the go.

1. Load the MyFRITZ!App to your device.

2. Connect your smartphone or tablet with your FRITZ!Box via wireless LAN.

3. Open the MyFRITZ!App.

4. To register with your FRITZ!Box, enter the data of your FRITZ!Box user account. These are your e-mail address or your FRITZ!Box user name plus the corresponding password.

You will be directed to the MyFRITZ! page of your FRITZ!Box.

Here you have access to the FRITZ!Box contents that are released for sharing in your FRITZ!Box user account; see page 49.

MyFRITZ! in the Home Network

MyFRITZ! can also be used over the web browser of any device in the home network that is connected with the FRITZ!Box.

1. Enter myfritz.box in the address field of your browser.

2. Log in to your FRITZ!Box.

    Depending on the login method you set for the home network, you must enter the FRITZ!Box password, or the user name and the password of the FRITZ!Box user account.

You will be directed to the MyFRITZ! page of your FRITZ!Box. In this case no login to MyFRITZ! is required.

If you logged in with the FRITZ!Box password, you now have access to all of the contents stored on your FRITZ!Box.

If you logged in using the information for your FRITZ!Box user account, the MyFRITZ! page will show those contents of your FRITZ!Box to which you have access rights.

Multiple FRITZ!Boxes

You can register multiple FRITZ!Boxes with one MyFRITZ! account.

*   Every FRITZ!Box is registered with the MyFRITZ! account over its own user interface.

    From the "Internet / MyFRITZ!" menu, select the setting "Register the FRITZ!Box with an existing MyFRITZ! account".

*   When you log in to MyFRITZ!, all registered devices will be displayed.

11.3   Security with MyFRITZ!

For the following MyFRITZ! activities the HTTPS security proto-col is used:

- setting up a MyFRITZ! account with myfritz.net

- registration of the FRITZ!Box with the MyFRITZ! account

- accessing the MyFRITZ! page of your FRITZ!Box over myfritz.net

- accessing the user interface of the FRITZ!Box over myfritz.net and over the MyFRITZ!App.

The FRITZ!Box generates its own HTTPS certificate. Because this certificate does not come from a certification authority preconfigured in common browsers, you have to confirm in your web browser or in the MyFRITZ!App that the connection should be established nevertheless. Firefox and Internet Ex-plorer will remember your confirmation and refrain from showing any further warnings.

The HTTP protocol is used to update the IP address with the MyFRITZ! web service each day. The password is never trans-mitted as clear text.

For further details on the HTTPS and HTTP protocols, see the section Access from the Internet via HTTPS, FTP and FTPS from page 73.

12 FRITZ!Box as an Internet Router

The FRITZ!Box connects computers in your home network with the Internet. This chapter explains the possibilities presented by using the FRITZ!Box as an Internet router and how to take advantage of them.

12.1 Parental Controls: Access Profiles for Internet Use

Using access profiles you can control the use of the Internet by devices in your network.

Access Profiles

Settings for Internet Use

The following settings for Internet use are defined in an access profile:

Setting	Description
Online time	The online time specifies when and for how long Internet access is permitted.
Permitted websites	Using filter lists you can specify which websites may be accessed.
Internet access through network applications	You can specify which network applications are allowed to communicate over the Internet.

Preconfigured and Own Access Profiles

- In the FRITZ!Box there are four preconfigured access profiles.

- You can create and configure many access profiles of your own.

No Network Device without Access Profile

- Network devices that log in to the home network for the first time are automatically assigned the preconfigured "Standard" access profile. As soon as a network device is registered in the home network you can assign a different access profile.

- Network devices that log in to the FRITZ!Box guest network are automatically assigned the "Guest" access profile. This is the only access profile possible in the guest network.

Preconfigured Access Profiles

In the FRITZ!Box there are four preconfigured access profiles available for use.

The "Standard" Access Profile

Property	Description
Limitations	In the factory settings the "Standard" profile is allowed to do everything. There are no restrictions on time or activity.
Changeable	The "Standard" profile can be changed.
Automatic assignment	Network devices that register with the FRITZ!Box for the first time are automatically assigned the "Standard" profile.
Standard	Unknown network devices can only receive the "Standard" profile. Unknown network devices are devices that have not registered with the FRITZ!Box, but should already have been configured in the FRITZ!Box and have parental controls configured.
No budget	No shared budget can be configured in the "Standard" profile.

The "Guest" Access Profile

Property	Description
Limitations	The profile has the following settings configured upon delivery: • There are no time restrictions. • HTTPS queries are permitted. • The web pages indexed by the German federal government (BPjM) will be filtered. • Surfing and mail are allowed. Web access is blocked for all other network applications.
Changeable	The "Guest" profile can be changed.
Automatic assignment	Network devices that are connected with the FRITZ!Box via the guest access receive the "Guest" profile.
Single access profile	This is the only access profile available for the guest access.
No budget	No shared budget can be configured in the "Guest" profile.

The "Unlimited" Access Profile

Property	Description
Limitations	This profile allows unrestricted use of the Internet.
Changeable	The "Unlimited" profile cannot be changed.

The "Blocked" Access Profile

Property	Description
Limitations	This profile blocks Internet use.
Changeable	The "Blocked" profile cannot be changed.

Online time

The online time is defined as follows:

Setting	Description
Period	On a timetable you define when the Internet connection may be used.
Online time	For each day of the week you define how long the Internet is allowed to be used.
Shared budget	You decide and define whether all network devices that use the same access profile must share this online time limit. For the preconfigured "Standard" and "Guest" access profiles, no budget sharing is permitted.

Example:

For a child you can configure an access profile to be assigned to all of the child's network devices. The online time in the access profile could look something like this example:

Monday and Wednesday	from 2 pm to 9 pm; no more than 3 hours each day
Tuesday, Thursday and Friday	from 6 pm to 9 pm; no more than 3 hours each day
Saturday and Sunday	from 10 am to noon; and from 4 pm to 10 pm; no more than 5 hours each day
Shared budget	yes all devices (computer, game console, smartphone, etc.) share the online time

Permitted Websites

Access to web sites with inappropriate content can be blocked using filters. The following filtering options are available:

- Prevent HTTP queries: You can prevent HTTPS queries. HTTPS is used, for instance, to open Facebook, Gmail and online banking.

- Permit websites with a whitelist:

  - The whitelist is a filter list that should be used when access should be limited to just a few websites.

  - Access to web pages entered in the whitelist is permitted.

  - When a whitelist is used, only those websites included in the list can be opened, and no others.

- Block websites with a blacklist:

  - The blacklist is a filter list that should be used when access to most websites is to be permitted, and the number of blocked web sites is relatively small.

  - Access to web pages entered in the blacklist is blocked.

  - BPjM module: The blacklist can integrate the BPjM list of websites with adult content issued by the German federal government.

  - If the blacklist is used, no website can be opened by entering its IP address. This is also true for web sites that are not included in the blacklist.

  - For applications that address websites only directly via the IP address, for instance virus scanner update software, the relevant IP addresses can be released for access by entering them in the exception list of "Permitted IP addresses".

Internet Access by Network Applications

You can list network applications for which you would like to block communication with the Internet. For instance, you can prohibit file sharing programs or online games from communicating over the Internet.

Configuring Parental Controls

Requirements

The "Internet / Filters" menu is available only if you have set up the Internet connection in the FRITZ!Box and already established an Internet connection.

Limitations

The "Internet / Filters" menu is **not** available if you have configured the FRITZ!Box as IP client. In this case, use the corresponding functions of the router whose Internet connection is being shared.

Preparations

- Configure the access profiles required for the members of the home network; see Configuring an Access Profile on page 67.

- Prepare the filter lists if you would like to use filter lists; see Editing Filter Lists from page 67.

- If desired, add the list of network applications; see Adding Network Applications from page 68.

Configuring Parental Controls for Network Devices

1. Open the FRITZ!Box user interface; see page 25.

2. Select the "Internet / Filters" menu.

3. Select a network device on the "Parental Controls" tab.

4. Click the [icon] button.

5. Select the access profile to be applied to the network device and then click "OK".

Configuring an Access Profile

Requirements

The "Internet / Filters" menu is available only if you have set up the Internet connection in the FRITZ!Box and already established an Internet connection.

Limitations

The "Internet / Filters" menu is **not** available if you have configured the FRITZ!Box as an IP client. In this case, use the corresponding functions of the router whose Internet connection is being shared.

Setting up an access profile

1.   Open the FRITZ!Box user interface; see page 25.

2.   Select the "Internet / Filters" menu.

3.   Select the "Access Profiles" tab.

4.   Click New access profile .

5.   Configure the settings for the access profile in the "New Access Profile" window. Use the FRITZ!Box Help.
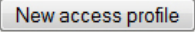
Editing Filter Lists

Requirements

The "Internet / Filters" menu is available only if you have set up the Internet connection in the FRITZ!Box and already established an Internet connection.

Limitations

The "Internet / Filters" menu is **not** available if you have configured the FRITZ!Box as anIP client. In this case, use the corresponding functions of the router whose Internet connection is being shared.

Editing a Filter List

1. Open the FRITZ!Box user interface; see page 25.

2. Select the "Internet / Filters" menu.

3. Select the "Lists" tab.

4. Click the [icon] button.

5. Select the list you would like to edit and then click "Edit".

6. Edit the list in the window that opens.

Adding Network Applications
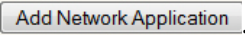
Requirements

The "Internet / Filters" menu is available only if you have set up the Internet connection in the FRITZ!Box and already established an Internet connection.

Limitations

The "Internet / Filters" menu is not available if you have configured the FRITZ!Box as an IP client. In this case, use the corresponding functions of the router whose Internet connection is being shared.

Adding a Network Application

1. Open the FRITZ!Box user interface; see page 25.

2. Select the "Internet / Filters" menu.

3. Select the "Lists" tab.

4. Click [Add Network Application].

5. In the "Network Application" window, enter the network application you would like to add to the list.

AVM FRITZ!Box Parental Controls for Windows Users

In the Windows operating systems (Windows 8, Windows 7 and Windows XP), parental controls can be also configured for each individual Windows user.

You will need the "AVM FRITZ!Box Parental Control" software if multiple Windows users with different rights in the Internet are sharing a single computer. The "AVM FRITZ!Box Parental Control" software detects the various Windows users.

AVM FRITZ!Box Parental Control

- The AVM FRITZ!Box software can be downloaded free of charge from the AVM website.

- The AVM FRITZ!Box parental control software must be installed on every Windows computer on which users are configured who are to be protected by parental controls.

- AVM FRITZ!Box parental controls is installed on the computer as a service. The service must be enabled at all times. If it is not enabled, the FRITZ!Box will not detect the user accounts. Windows users that are not detected are treated like user accounts without any parental controls.

Downloading AVM FRITZ!Box Parental Controls from the AVM Websites

1. Open the AVM website: avm.de/en.

2. Select "Service".

3. Scroll to the "More Services" area.

4. Click on "FTP Server".

    This will take you to AVM's FTP server.

5. Select "fritz.box".

6. Select "tools".

7. Select "Parental Control".

8. Select "English".

9. Click the exe file and save the program on your computer.

Configuring Parental Control for Windows Users

1. Open the FRITZ!Box user interface; see .

2. Select the "Internet / Filters" menu.

3. Select a Windows user on the "Parental Controls" tab.

4. Click the button.

5. Select the access profile to be applied to the Windows user and then click "OK".

12.2   Port Forwarding: Making Computers Accessible from the Internet

With default settings in the FRITZ!Box, programs on your computer and LAN cannot be accessed from the Internet. For applications like online games and file sharing software or server services like HTTP, FTP, VPN, terminal and remote access servers, you have to make your computer accessible for other Internet users.

Port Forwarding

Using port forwarding you allow incoming connections from the Internet. By releasing certain ports for incoming connections, you grant controlled access to the computers in your network to other Internet users.

The following port forwarding methods are possible in the FRITZ!Box:

PING	IPv4: The FRITZ!Box responds to ping inquiries from the Internet addressed to the IPv4 address of the FRITZ!Box.
	IPv6: The FRITZ!Box responds to ping inquiries from the Internet addressed to the IPv6 address of the FRITZ!Box. Additionally, you can set up PING6 port forwarding rules for each computer in the home network since each computer has its own globally valid IPv6 address.

TCP UDP	IPv4: Within IPv4 networks you can open the FRITZ!Box firewall for the protocols TCP and UDP when entering the port range. One port can be opened for exactly one computer.
	IPv6: Within IPv6 networks you can open the FRITZ!Box firewall for the protocols TCP and UDP when entering the port range. One port can be opened for each computer in the network.
ESP GRE	IPv4: Within IPv4 networks you can open the firewall for the two protocols ESP and GRE, which do not use ports.
Exposed host (Open firewall completely)	IPv4: Within IPv4 networks you can open the firewall completely for one computer. This computer is then no longer protected by the FRITZ!Box firewall. If individual ports are already open for other computers, then data packets for these ports are not forwarded to the exposed host, but to the other computer instead.
	IPv6: Within IPv6 networks you can open the firewall completely for each computer. These computers are then no longer protected by the FRITZ!Box firewall.

Setting Up Port Forwarding in the FRITZ!Box

- IPv4: Port forwarding for IPv4 is set up in the "Internet / Permit Access" menu, on the "Port Forwarding" page.

- IPv6: Enable the advanced view. Port forwarding for IPv6 is also set up in the "Internet / Permit Access" menu, on the "IPv6" page.

Determining the IPv4 Address for Accessing the FRITZ!Box

If you have enabled ports for forwarding in the FRITZ!Box, other Internet users can access your computers at the IP address assigned to your FRITZ!Box by the Internet service provider. This is a public IPv4 address.

Here is how to determine the public IPv4 address of the FRITZ!Box:

1. Open any Internet page in order to establish an Internet connection.

2. Open the FRITZ!Box user interface and enable the advanced view in the user interface.

3. The FRITZ!Box's public IPv4 address is displayed on the "Overview" page in the "Connections" area.

Can always be reached, even when the IP address changes

Every time the Internet connection is interrupted, the Internet service provider re-assigns the IP address. The IP address may change in the process. Therefore it is a good idea to use MyFRITZ! or dynamic DNS so that the IP address can always be reached under the same name. For more information about MyFRITZ!, see the chapter MyFRITZ!: Accessing the FRITZ!Box from Anywhere on page 55. For more information about dynamic DNS, see the section Dynamic DNS: Name instead of IP Address on page 72.

12.3   Dynamic DNS: Name instead of IP Address

Dynamic DNS is an Internet service that makes it possible for the FRITZ!Box to remain accessible from the Internet at all times under a fixed name, even though the public IP address changes.

Dynamic DNS can be used as an alternative to MyFRITZ!. Both services can be used in parallel.

You must register with a dynamic DNS provider to use this service. When you register, you agree on the fixed name (domain name) at which your FRITZ!Box should be accessible from the Internet. You also define a user name and password.

Every time the IP address changes, the FRITZ!Box transmits the new IP address to the dynamic DNS provider in the form of an update request. Then the domain name is assigned to the current IP address by the dynamic DNS provider.

Setting Up Dynamic DNS in the FRITZ!Box

1. Open the FRITZ!Box user interface; see page 25.

2. Enable the advanced view.

3. Select the "Internet / Permit Access" menu.

4. Select the "Dynamic DNS" page and set up dynamic DNS. See the Help available in the FRITZ!Box user interface for more information.

12.4 Access from the Internet via HTTPS, FTP and FTPS

Over the Internet it is possible to access the user interface of the FRITZ!Box. With a laptop, smartphone or tablet PC you can configure settings in the FRITZ!Box user interface.

Requirements for Access over the Internet

*   Access to the user interface: Every user who would like to access the FRITZ!Box externally from the Internet requires a FRITZ!Box user account which is authorized for access from the Internet.

*   Access to storage: Every user who would like to access the storage of the FRITZ!Box externally from the Internet requires a FRITZ!Box user account with the right to access the contents on the storage media from the Internet.

*   The protocols for the desired access must be enabled in the FRITZ!Box.

HTTPS, FTP and FTPS

The protocols HTTPS, FTP and FTPS are used for access over the Internet.

- HTTPS (Hypertext Transfer Protocol Secure)

  HTTPS is an Internet protocol for bug-proof communication between the web server and the browser in the World Wide Web.

  Enable this protocol to allow access to the FRITZ!Box from the Internet.

- FTP (File Transfer Protocol)

  FTP is a network protocol for transmitting files in IP networks.

  Enable this protocol to allow access by FTP to the FRITZ!Box storage media from the Internet.

- FTPS (FTP over SSL)

  FTPS is a method for encrypting the FTP protocol.

  Enable this protocol to secure transmission over FTP.

Enabling HTTPS, FTP and FTPS in the FRITZ!Box

1. Open the FRITZ!Box user interface; see page 25.

2. Enable the advanced view.

3. Select the "Internet / Permit Access" menu.

4. Select the "FRITZ!Box Services" page and enable the protocols you need. See also the Help on the user interface.

12.5   Prioritization: Right of Way for Internet Access

Prioritization is a function you can use to specify that network applications and network devices be treated with higher or lower priority when they access the Internet connection. For example, you may wish to ensure that applications like IPTV and video on demand are always treated with higher priority than other applications. You can also specify that file-sharing applications like eMule and BitTorrent always have to wait behind online games.

Categories for Prioritization

There are three categories for prioritization: "Real-time applications", "Prioritized applications" and "Background applications".

Network applications and network devices are assigned to the categories using rules.

Real-time Applications

This category is suitable for applications with high demands on transmission speed and reaction times (for example, IPTV or video on demand).

- Network applications of this category always have priority over other applications accessing the Internet at the same time.

- When the Internet connection is working at full capacity, the network packets of the applications of this category will always be sent first. In this case data from network applications assigned to other categories will be transmitted later.

- If multiple network applications are assigned to this category, then they must share the available capacity.

- Whenever Internet telephony is included in this category, this application always has the highest priority, even over other real-time applications.

Prioritized Applications

This category is suitable for applications that require a fast reaction time (for example, company access, terminal applications, games).

- For network applications prioritized in this category, 90% of the FRITZ!Box's upload bandwidth is available, as long as no application from the "Real-time applications" category requires bandwidth. The remaining 10% of the upload bandwidth is available for applications that are prioritized in lower categories or not prioritized at all.

- If multiple network applications are assigned to the "Prioritized applications" category, then they must share the available capacity.

Background Applications

This category is suitable for applications that do not require any high transmission speed and which are not time-critical (for example, peer-to-peer services or automatic updates).

- Network applications assigned to this category are always treated with the lowest priority when the Internet connection is working at full capacity. So whenever an application from a different category or a non-prioritized application requires the entire bandwidth, all background applications must wait until bandwidth capacity becomes available again.

- If no other network applications are active, then the background applications receive the entire bandwidth.

Prioritization Method in the FRITZ!Box

The following techniques are used in the FRITZ!Box to send data packets according to their prioritization:

- Change in the order in which packets are sent to the Internet (upstream direction)

  The order of the packets the FRITZ!Box receives from the Internet (downstream direction) cannot be changed.

- Discard low-priority packets in order to ensure the transmission of higher-priority packets. This technique is used whenever more packets are supposed to be sent to the Internet than the upstream transmission rate of the Internet connection allows.

- As long as no packets are being sent from higher-priority applications, the full transmission rate of the Internet connection is available for low-priority packets.

Configuring Prioritization in the FRITZ!Box

1. Open the FRITZ!Box user interface; see page 25.

2. Enable the advanced view.

3. Configure prioritization in the "Internet / Filters / Prioritization" menu.

12.6 VPN: Remote Access to the Home Network

Via a VPN (Virtual Private Network) a secure remote access to the network of the FRITZ!Box can be established.

VPN in the FRITZ!Box

IPSec	VPN in the FRITZ!Box is based on the IPSec standard.
Computer-LAN	Computer-LAN linkup: VPN connections can be configured for individual remote computers.
LAN-LAN	LAN-LAN linkup: VPN connections can be configured for remote networks.
Eight simultaneous connections	FRITZ!Box supports a maximum of eight simultaneous VPN connections.

Configuration software	The configuration files for the VPN connections are created using a separate program. The program is provided free of charge and can be downloaded from the AVM website.
FRITZ!Box user	For FRITZ!Box users who have the right to access the FRITZ!Box via VPN, no further settings must be configured. All required VPN settings are included in the user account.
VPN client	A free VPN client for individual computers can also be downloaded from the AVM website.

The AVM website offers a Service Portal which presents comprehensive information on VPN in general and in connection with the FRITZ!Box. Visit this portal to obtain more detailed information.

avm.de/en/vpn

Configuring VPN in the FRITZ!Box

1.	Open the FRITZ!Box user interface; see page 25.

2.	Enable the advanced view.

3.	Select the "Internet / Permit Access" menu.

4.	Select the "VPN" page.

See also the Help available in the FRITZ!Box user interface for assistance with configuring VPN.

Supplementary Software for VPN

All of the information required for a VPN is saved in a configuration file. The terminals involved in any VPN must receive this file.

Individual computers that are networked over a VPN require a VPN client.

•	The "Configure FRITZ!Box VPN Connection" Wizard

	AVM provides the "Configure FRITZ!Box VPN Connection" software for creating configuration files. This program is a Wizard that takes you step by step through the VPN

configuration. All of the necessary VPN settings, like the encryption method and access rules, are set automatically. The resulting configuration files must be imported to the terminals of the VPN tunnel. At the terminal with the FRITZ!Box the configuration file is then imported to the FRITZ!Box. The VPN parameters in these files can be adjusted manually to connect to products by other manufacturers.

- The "FRITZ!VPN" VPN client

    AVM offers the "FRITZ!VPN" software as a VPN client.

Both the Wizard and the client can be downloaded free of charge from the VPN Service Portal on the AVM website:

avm.de/en/vpn

12.7   Freely Selectable DNS Servers

DNS servers are preset in the FRITZ!Box for IPv4 and IPv6.

These are the DNS servers assigned by the Internet service provider.

For both IPv4 and IPv6, the preset DNS server can be replaced by a free DNS server. Free DNS servers include, for instance, OpenDNS and Google DNS.

Here is how to change the DNS server entry:

The "DNSv6" page is displayed only if you enabled IPv6 support for the FRITZ!Box on the "IPv6" page.

1.   Open the FRITZ!Box user interface; see .

2.   Enable the advanced view.

3.   Change the settings for the DNS servers.

12.8 DNSSEC: Security for DNS Queries

DNSSEC is short for Domain Name System Security Extensions. As the name says, this is an extension of DNS, the domain name system.

DNSSEC ensures that both the DNS server and the information returned by the DNS server are authentic, or genuine.

Security with DNSSEC

When a home user surfs the web, she or he sends queries to the Internet by entering URLs in the address line of the browser. A URL is the name of a website that is easy to remember, for instance avm.de/en. Every query is sent to the DNS server first. The DNS server resolves the URL into the corresponding IP address. There is one unique IP address for every URL.

The home user relies on the authenticity of the IP address returned by the DNS server. Authentic means that the response is the IP address of the desired website, and not a faked IP address that leads to a fake website. DNSSEC can ensure that the returned addresses are authentic.

Support with the FRITZ!Box

The FRITZ!Box supports DNSSEC queries over UDP.

The FRITZ!Box has a DNS proxy. The computers in the home network use the FRITZ!Box as a DNS server. The FRITZ!Box forwards DNSSEC queries from the home network to the Internet. The FRITZ!Box forwards DNSSEC responses from the Internet to the home network. The DNSSEC information must be validated on the computer in the home network. For this DNSSEC must be supported in the operating system.

12.9   IPv6: The New Internet Protocol

IPv6 stands for Internet protocol version 6 and is the successor to IPv4.

The FRITZ!Box supports the new IPv6 web protocol and can establish IPv6 connections:

- IPv6 support can be switched on in the FRITZ!Box user interface.

- For simultaneous use of IPv6 and IPv4, the FRITZ!Box supports dual-stack and dual-stack lite. This means that the FRITZ!Box can communicate with both IPv4 and IPv6 domains in the Internet.

- The FRITZ!Box supports native IPv6 and IPv6 with a tunnel protocol. Native IPv6 means that your Internet service provider supports IPv6 directly on your line.

IPv6-Capable Services in the Home Network

- FRITZ!NAS access via SMB or FTP/FTPS

- Access to the user interface with http or https over IPv6

- The DNS resolver of the FRITZ!Box supports queries for IPv6 addresses (AAAA records) and can query the upstream DNS resolver of the Internet service provider over IPv6.

- The globally valid prefix is distributed via router advertisement.

- For guest access to the wireless LAN, the home network and wireless guests are separated by IPv6 subnetworks.

- UPnP, UPnP AV media server

- Automatic provisioning (TR-064)

IPv6-Capable Services in the Internet

- FRITZ!NAS access via FTPS

- Completely closed firewall to protect against unwanted data from the Internet (Stateful Inspection Firewall)

- Automatic provisioning (TR-069)

- Time synchronization over NTP (Network Time Protocol)

- Remote access via https

- Dynamic DNS via dyndns.org and namemaster.de

Configuring IPv6 in the FRITZ!Box

1. Open the FRITZ!Box user interface; see .

2. Enable the advanced view.

3. Select the "Internet / Account Information" menu.

4. Select the "IPv6" page and set up IPv6 in the FRITZ!Box. See the Help available in the FRITZ!Box user interface for more information.

Configuring IPv6 on the Computer

You can establish connections in the IPv6 range of the Internet only if IPv6 is installed and enabled on the computers in your home network.

- IPv6 is already installed and enabled in the Windows 7 and Windows Vista operating systems.

- IPv6 is not installed and enabled in standard Windows XP. You must install and enable IPv6 in order to use it. The IPv6 installation requires Service Pack 2 for Windows XP.

- IPv6 has been available in the Mac OS X operating systems since Mac OS 10.

12.10 Mobile Network: Replacing Faulty DSL

Internet access over the mobile telephone network can be set up so that the mobile telephone connection is established automatically whenever the DSL connection fails. This guarantees Internet access even when the DSL connection is fails. A USB modem for mobile Internet access (UMTS/HSPA) and a SIM card from a mobile communications provider are required for this. The FRITZ!Box supports UMTS/HSPA modems from various manufacturers.

Here is how to set up the mobile telephone connection as a substitute upon DSL failure:

1. Insert the USB modem in the USB port on the FRITZ!Box.

2. Open the FRITZ!Box user interface; see .

   In the "Internet" menu, the sub-menu "Mobile Communications" is displayed.

   The "Mobile Communications" menu is not available until the UMTS/HSPA modem has been connected to the USB port of the FRITZ!Box.

3. Select the setting "Automatically enable the mobile connection when the DSL connection is disrupted".

4. Configure the settings for your Internet connection over the mobile communications network. In the Help of the FRITZ!Box user interface you can find detailed instructions.

Access to the Internet is now guaranteed, even when the DSL connection fails.

As soon as the DSL connection is stable and available for at least 30 minutes, the connection will be switched back to DSL.

12.11 LISP: FRITZ!Box as a LISP Router

LISP is a routing architecture which separates information about location and identity. There are two IP addresses: one for the location and one for the identity.

The FRITZ!Box can be configured as a LISP router.

- This chapter address system administrators.

- It presents a short introduction to LISP.

- You receive an overview about the possibilities for using LISP.

- This section includes instructions on how to configure the FRITZ!Box as a LISP router.

Definition and Components

LISP: Definition

LISP: Locator/Identifier Separation Protocol	
IP protocol	LISP is a protocol for the transmission of IP packets.
IP address pair	LISP uses IP address pairs: • One IP address for identification, which is called the EID (Endpoint Identifier). The EID can be the IP address of a host or an entire IP subnet. • One IP address for the location, known as the RLOC (Routing Locator). The RLOC is the IP address of the LISP router.
Tunnel protocol	LISP is a tunnel protocol. A LISP packet consists of an internal IP packet and an additional external header. The header of the internal packet contains the EID; the external header contains the RLOC.

Properties of RLOC and EID

RLOC	• specifies the location where the addressed network (network segment or network device) is located • is assigned by the Internet service provider • is a public IP address • is contained in the external header of the LISP packet • can be an IPv4 address • can be an IPv6 address
EID	• identifies a network (network segment or network device) • is assigned by the LISP provider • is contained in the internal header of the LISP packet • can be an IPv4 address • can be an IPv6 address • can be a public IP address • can be a private, non-public IP address

Components of a LISP System

Mapping system	The mapping system is responsible for allocating the EIDs to the RLOCs.
ETR (Egress Tunnel Router)	The ETR accepts IP packets whose destination IP address contained in the external header is the ETR's own RLOC. ETR unpacks the LISP packets.
ITR (Ingress Tunnel Router)	The ITR accepts IP packets from members of the local IP network (EID network) and packs them into LISP packets. The external header of the LISP packet contains the RLOC of the destination network (remote EID network) as the destination address.
PETR (Proxy ETR)	A PETR (Proxy ETR) is required for communication between LISP sites and non-LISP sites. On the LISP site it works like a LISP router; on the non-LISP site it works like a native IP router.
PITR (PROXY ITR)	A PITR (Proxy ITR) is required for communication between LISP sites and non-LISP sites. On the LISP site it works like a LISP router; on the non-LISP site it works like a native IP router.
xTR	xTR is what we call a component that is both ETR and ITR. xTR is also known as a tunnel endpoint or encapsulation endpoint.

Possible Uses

- LISP is useful if technical or organization reasons make it preferable to keep the same IP addresses, even when you switch Internet service providers.

  Mobility example: When you change locations, devices do not lose their identity (host devices, VM).

- LISP is suitable for communication between IPv4 and IPv6 networks.

- Transport of address families: IPv4 via IPv4, IPv4 via IPv6, IPv6 via IPv6, IPv6 via IPv4

  Example: The encapsulation of IPv6 packets in IPv4 headers allows IPv6 web sites to be connected over IPv4.

Configuring FRITZ!Box as a LISP Router

FRITZ!Box as a LISP Router

- The FRITZ!Box can be configured as a LISP router.

- As a LISP router the FRITZ!Box is an xTR (ETR and ITR).

Preparations

You need a LISP provider.

➡ Register with a LISP provider.

All of the information you need to configure the FRITZ!Box as a LISP router is supplied by the LISP provider.

Configuring a LISP Router

1. Open the FRITZ!Box user interface; see .

2. Enable the advanced view.

3. Select the "LISP" tab.

4. Enable the setting "LISP support enabled".

5. Enter in the fields the information you received from the LISP provider.

13 FRITZ!Box as a Wireless Access Point

The FRITZ!Box is a wireless access point for wireless devices like note-books, tablets or smartphones. The FRITZ!Box can establish wireless LAN connections compliant with the fast Wireless AC standard and the Wireless N standard in two frequency bands at the same time. The FRITZ!Box is preconfigured with an encryption method from today's safest method WPA2. This encryption method is supported by most of the latest wireless devices. The FRITZ!Box supports wireless LAN con-venience functions like night service and WPS Quick Connection.

13.1 Switching the Wireless Radio Network On and Off by Schedule

You can switch the wireless radio network of the FRITZ!Box automatically according to a schedule. It reduces the power consumption of the FRITZ!Box by completely turning off the WLAN module. The FRITZ!Box schedule also affects any other FRITZ!Box products connected in the network (the FRITZ!WLAN Repeater, for instance): the wireless transmis-sion of these devices is also switched on and off in the FRITZ!Box settings.

1. Open the FRITZ!Box user interface; see .

2. Open the "WLAN / Schedule" menu.

3. Enable the schedule for the wireless radio network.

4. Configure the settings for the schedule:

   – With the options "Switch off wireless LAN daily" and "Switch wireless LAN off according to schedule" you define the intervals for switching.

   – You can also select the option "The radio network cannot be switched off until no more wireless LAN devices are active".

5. Click "Apply" to save your settings.

Now the schedule of the FRITZ!Box is enabled and configured.

In the Help of the FRITZ!Box user interface you can find de-tailed instructions.

Switching Wireless LAN On and Off

You can switch the wireless radio network of the FRITZ!Box on and off at any time, even when the device is hibernating.

- Press the "WLAN" button on the FRITZ!Box briefly

13.2 Extending a Wireless Network

The range of a wireless radio network is not fixed. It depends on

- the wireless devices you are using for your wireless LAN connections

- interference in the vicinity of your wireless radio network

- the structural conditions where you operate the wireless radio network

- the number of wireless devices in the vicinity of your FRITZ!Box that work in the same frequency range

You can extend the range of your wireless radio network with a wireless LAN repeater.

Or you can set up a second FRITZ!Box as a wireless LAN repeater.

Extending a Wireless Radio Network with a Wireless LAN Repeater

You can extend your wireless radio network with a wireless LAN repeater. In combination with the FRITZ!Box the AVM FRITZ!WLAN Repeater is especially suitable. All models of the FRITZ!WLAN Repeater series can be integrated into your wireless radio network and your home network by WPS Quick Connection. Find out more in the Internet at:

en.avm.de/products/fritzwlan/

Using an Existing FRITZ!Box as a Repeater

You can extend the wireless LAN radio network of your FRITZ!Box with an additional FRITZ!Box you already have. To extend your wireless LAN, configure the repeater function in this device.

You can configure a FRITZ!Box as a repeater by working through the following steps:

1. Open the FRITZ!Box user interface; see .

2. Select the "System / View" menu.

3. Select the "Advanced View" option and confirm by clicking "Apply".

4. Select the "WLAN / Repeater" menu and follow the instructions displayed on the screen.

In the Help of the FRITZ!Box user interface you can find detailed instructions.

13.3 Wireless LAN—Getting Technical

A wireless LAN is based on standards defined by the Institute of Electrical and Electronic Engineers (IEEE). These standards describe, for instance, the transmission speeds, encryption methods and frequencies used in a wireless network.

Data Throughput

The FRITZ!Box supports your choice of the standards IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, IEEE 802.11n and IEEE 802.11ac. Wirelsess devices based on one or more of the standards listed can be used for wireless LAN connections with the FRITZ!Box.

Standard	Frequency band	Gross Throughput up to	Net Throughput up to
802.11b	2.4 GHz	11 Mbit/s	5 Mbit/s
802.11g	2.4 GHz	54 Mbit/s	25 Mbit/s
802.11a	5 GHz	54 Mbit/s	25 Mbit/s
802.11n	2.4 / 5 GHz	450 Mbit/s	200 Mbit/s
802.11ac	5 GHz	1300 Mbit/s	650 Mbit/s

The standards are intended for different frequency bands.

IEEE 802.11a

Because this standard works exclusively in the seldom used 5-GHz range, it offers the opportunity to transmit data relatively free of interference from external influences. Wireless devices that support 802.11a are much less common than devices that work in accordance with the 802.11b/g standard.

IEEE 802.11b

With a maximum throughput rate of 11 Mbit/s, this is the oldest wireless standard. Older wireless devices of the first generation can communicate with the FRITZ!Box using 802.11b. However, if the wireless device supports newer standards such as 802.11g, the latest standard should be used.

IEEE 802.11g

In this wireless LAN standard data are transmitted in the 2.4-GHz range at a maximum gross throughput of 54 Mbit/s. This standard is compatible with a wide range of wireless devices.

However, due to heavy use of the 2.4-GHz range, interference is more common than in the less-used 5-GHz range.

IEEE 802.11n

This standard allows for high throughput rates and ranges. The FRITZ!Box supports 802.11n in the 2.4-GHz frequency band, and parallel in the 5-GHz frequency band. Modulation processes and antenna techniques like MIMO (Multiple Input, Multiple Output) use whichever frequency band is available more effectively than the older standards.

The use of the 802.11n standard—and thus the availability of higher throughput rates—is possible only if the wireless LAN connection is secured using the WPA2 security mechanism (AES-CCMP).

Thanks to compatibility with the 802.11g standard, you can also continue to use older wireless devices.

IEEE 802.11ac

This standard provides for transmission rates in the gigabit range. The high throughput rates are achieved using wider wireless LAN channels, deeper modulation and more MIMO streams. Channels can be 20, 40, or 80 MHz wide. Modulations of up to 8 bit/256QAM are applied. The standard uses only the 5-GHz range, which reduces interference with other users.

This standard is compatible with the 802.11a and 802.11n standards, which means it can be used with older wireless devices.

The FRITZ!Box 3490 has a second access point responsible for the 2.4-GHz range. This allows wireless devices compatible with the 802.11b/g/n to be used as well.

The use of the 802.11ac standard—and thus the availability of higher throughput rates—is possible only if the wireless LAN connection is secured using the WPA2 security mechanism (AES-CCMP).

Setting the Right Standard in the FRITZ!Box

The throughput rate that can be achieved in your wireless radio network depends on the wireless standards used by the integrated wireless devices. These wireless standards must also be set in the FRITZ!Box. Proceed as follows to check which wireless LAN standards are set and change them if needed:

1. Open the FRITZ!Box user interface; see page 25.

2. Enable the advanced view.

3. Open "WLAN / Radio Channel" and select which wireless LAN standards should be used for both frequency bands.

Note the following for the configuration of this setting:

- Your FRITZ!Box 3490 can make two wireless networks available simultaneously for data transmission. One of the wireless radio networks works in the 2.4-GHz frequency band, and the other in the 5-GHz frequency

band. This means the FRITZ!Box can be implemented as an especially flexible wireless access point for the various wireless devices and applications in your network.

- Set the standards of the two wireless radio networks in the FRITZ!Box such that they are compatible with all of the wireless LAN devices used in the wireless network.

Make a note of which standards the wireless devices in your network are compatible with and then adjust the FRITZ!Box settings according to the following information:

11n, 11g

In your radio network there are wireless LAN devices that are compatible with one or both of the following standards:

- 802.11n
- 802.11g

In this case set the wireless LAN standard for the 2.4-GHz frequency band to: 802.11n+g

11g, 11b

In your radio network there are wireless LAN devices that are compatible with one or both of the following standards:

- 802.11g
- 802.11b

In this case set the wireless LAN standard for the 2.4-GHz frequency band to: 802.11b+g

11n, 11g, 11b

In your radio network there are wireless LAN devices that are compatible with one or all of the following standards:

- 802.11n
- 802.11g
- 802.11b

In this case set the wireless LAN standard for the 2.4-GHz frequency band to: 802.11n+b+g.

11n, 11a

In your radio network there are wireless LAN devices that are compatible with one or both of the following standards:

- 802.11n

- 802.11a

Set the wireless LAN standard for the 5-GHz frequency band to: 802.11n+a

11ac

In your radio network there are wireless devices that support the 802.11ac standard:

Set the wireless LAN standard for the 5-GHz frequency band to: 802.11ac

An unused frequency band can be disabled in the FRITZ!Box in order to reduce energy consumption without losing wireless LAN connections.

The Standard for Security

IEEE 802.11i

The WPA2 security mechanism is defined in the IEEE 802.11i standard. WPA2 is an extension of the familiar security mechanism WPA (Wi-Fi Protected Access).

The main feature of the extension of WPA to WPA2 is the AES-CCMP encryption process.

Mechanism	Encryption
WPA	TKIP (Temporary Key Integrity Protocol)
WPA2	TKIP AES-CCMP based on the extremely secure AES (Advanced Encryption Standard) procedure. CCMP (Counter Mode with CBC-MAC Protocol) defines how the AES procedure is applied to wireless LAN packets.

FRITZ!Box supports the AES encryption procedure as part of the WPA2 mechanism, and the TKIP encryption procedure as part of the WPA mechanism. This means that the FRITZ!Box can be used in combination with any wireless devices that also support WPA2 with AES or WPA with TKIP.

Frequency Ranges

Wireless LAN uses the frequency ranges at 2.4 GHz and 5 GHz for transmission.

With the FRITZ!Box 3490 you can establish wireless LAN connections in both frequency ranges at the same time.

2.4-GHz Frequency Band

In the 2.4-GHz frequency band wireless LAN works in the same range as Bluetooth, microwave devices and various other devices like radio-controlled toys, garage-door openers and video bridges. This means that interference may occur within wireless networks operated in the vicinity of such devices. Generally this has adverse effects on the transmission rate, including aborted connections.

A channel can have a bandwidth of 20 MHz (throughput of up to 216 Mbit/s) or 40 MHz (throughput of up to 450 Mbit/s).

Channels located directly next to each other in the 2.4-GHz band may overlap and result in mutual interference. For instance, if several wireless networks are operated close to each other in the 2.4-GHz frequency range with a bandwidth of 20 MHz, a distance of at least five channels should be left empty between each two channels used. This means that if channel 1 is selected for one wireless network, the channels 6 through 13 can be selected for a second wireless network. This maintains the minimum distance between channels.

Should interference in a wireless network persist, the first step should be to select a different channel.

Wireless Auto Channel

With the wireless auto channel function, the FRITZ!Box automatically searches for the channel subject to the least interference. This process takes into consideration interference from radio networks in the vicinity (wireless access points) and potential sources of interference (for instance video bridges, baby monitors, microwave ovens). Should problems with interference persist despite this function, try to identify the source of interference and switch it off manually.

5-GHz Frequency Band

The FRITZ!Box can operate in parallel in the 5-GHz frequency band. This frequency range is used much less often than the most common 2.4-GHz frequency range.

In the 5-GHz frequency band the FRITZ!Box supports automatic channel switching by DFS (Dynamic Frequency Selection). DFS ensures that the channels from 52 to 140 are kept free for higher-priority users, like weather radar systems. If you are operating your FRITZ!Box in one of these channels, it monitors the selected channel periodically for higher-priority users, and, if necessary, switches to a different channel. Note that the FRITZ!Box waits up to ten minutes, as legally required, before occupying a free channel. During this period you cannot register any wireless devices. The wireless LAN connection is then established automatically.

A prerequisite for use of the 5-GHz frequency band is that wireless devices used in the network support this frequency range in accordance with the IEEE 802.11a, IEEE 8002.11n or IEEE 802.11ac standard.

In the 5-GHz frequency band, two large ranges of frequencies can be used: 5.15 GHz to 5.35 GHZ, and 5.47 GHz to 5.805 GHz. In the EU, up to 19 channels are available in these areas:

5150—5350 MHz (channels 36, 40, 44, 48, 52, 56, 60 and 64)

5470—5725 MHz (channels 100, 104, 108, 112, 116, 120, 124, 128, 132, 136 and 140)

Different conditions may apply for the individual ranges.

2.4 GHz and 5 GHz

The FRITZ!Box works in the wireless network in the 2.4-GHz range and parallel in the 5-GHz range. Both frequency ranges can be used simultaneously for wireless LAN connections. This means you always have the optimum data connection at your disposal:

For applications that rely on a steady, high throughput rate ("streaming"), use the 5-GHz frequency band. This radio band provides more channels, these channels do not overlap, as well as experiencing significantly less external interference.

For applications that require a low to normal throughput rate (for instance, reading and writing e-mail), use the 2.4-GHz frequency band.

Bandwidth

Depending on which generation of the IEEE 802.11n standard is used, the FRITZ!Box can transport 300 to 450 Mbit/s over wireless LAN. Up to 1300 Mbit/s are possible with the IEEE 802.11ac standard. If not enough space is available in the radio spectrum to allow interference-free transmission on the channel with bandwidth of 40/80 MHz, the FRITZ!Box automatically reduces bandwidths to 20/40 MHz ("fallback") with a correspondingly lower transmission capacity.

Standard	Channel Bandwidth (MHz)
802.11ac	Automatic selection of 20, 40 or 80
802.11n	Automatic selection of 20 or 40
802.11a	20 (always)

For connections in accordance with the 802.11ac standard with three separate data streams (three antennas), higher data throughput can be achieved with greater bandwidth:

Bandwidth (MHz)	Maximum Data Throughput (Mbit/s)
20	216
40	450
80	1300

Increasing bandwidths also increases the probability of interference by wireless networks in the vicinity. Large bandwidths reduce the frequency range available to other wireless networks in the vicinity.

Allocation of the Wireless LAN Channels in the 2.4-GHz Range

Channel	Frequency (GHz)	Channel	Frequency (GHz)
1	2.412	8	2.447
2	2.417	9	2.452
3	2.422	10	2.457
4	2.427	11	2.462
5	2.432	12	2.467
6	2.437	13	2.472
7	2.442		

Allocation of the Wireless LAN Channels in the 5-GHz Range

Channel	Frequency (GHz)	Channel	Frequency (GHz)
36	5.18	108	5.54
40	5.20	112	5.56
44	5.22	116	5.58
48	5.24	120	5.60
52	5.26	124	5.62
56	5.28	128	5.64
60	5.30	132	5.66
64	5.32	136	5.68
100	5.50	140	5.70 (20 MHz bandwidth only)
104	5.52		

14 FRITZ!Box Connects Network Devices

All network devices connected with the FRITZ!Box comprise a network. Network devices include, for instance, computers, game consoles and smartphones. The devices can be connected with the FRITZ!Box by cable or wirelessly. This chapter describes the network settings in the FRITZ!Box and how you can change them. You will also learn how you can change the IP settings for the computer in the most common operating systems.

14.1 Network Settings in the FRITZ!Box

The FRITZ!Box is delivered with preconfigured network settings. According to these settings, all network devices connected with the FRITZ!Box are located in a single network.

The network settings can be changed and adapted to your conditions and needs. But you should do so only if you are well versed in networking technology.

Network Overview

The FRITZ!Box user interface shows an overview with all of the devices and users connected with the FRITZ!Box.

The network overview "Devices and Users" is found in the menu "Home Network / Network".

- For each user and each network device, you find an entry in the network overview.

- If you use FRITZ!Powerline devices in your network, then the FRITZ!Powerline devices are entered in the network overview along with the network devices connected to the FRITZ!Powerline devices.

- The Network Overview is divided into the areas "Active Connections", "Guest Network" and "Idle Connections".

The columns have the following meanings:

Symbol	A green LED before the device name indicates that a device is actively connected with the FRITZ!Box, but not using the Internet connection at this time. A green-blue globe indicates that the device is currently using the Internet connection.
Name	This column displays the name under which the user or the network device is known to the FRITZ!Box. The names of network devices can be changed by clicking the button to edit the entry.
IP Address	For network devices, also displayed is the IP address with which the device is integrated into the FRITZ!Box network.
Connection	The wireless LAN icon is displayed for wireless connections.
Properties	This column indicates whether port forwarding or parental controls are enabled for the respective user or network device.
	Button for editing the entry The button opens the entry in editing mode. This view displays information about the network device, for instance on parental controls or port forwarding settings. The name of the device in the FRITZ!Box can be changed here.
	Button for deleting the entry Users or network devices that do not have an active connection to the FRITZ!Box can be deleted from the network overview by clicking this button.

Accessing Network Devices by Mouse Click

Network devices that can be reached over the HTTP protocol can be accessed within the home network with a the click of the mouse. Clicking the device name opens the user interface of the HTTP application.

Always Assigning the Same IP Address

The editing mode for network devices includes the setting "Always assign this network device the same IP address".

When this setting is enabled for a network device, the DHCP server of the FRITZ!Box will assign the same IP address to this device each time the connection is established.

Starting the Computer—Wake on LAN

Wake on LAN is a function that allows a computer in the local network to be started when it is accessed from the Internet. For instance, you can access a computer using remote maintenance software, without wasting electricity by keeping the computer switched on permanently. The computer must be in standby operation.

The Wake on LAN function of computers can be enabled in the editing mode for network devices. The computers must support Wake on LAN and be connected with the FRITZ!Box with a network cable. The Wake on LAN function is also available when the devices are connected via FRITZ!Powerline devices.

The FRITZ!Box supports Wake on LAN both for IPv4 and for IPv6 connections.

- The "Start Computer" button

    You can start the computer each time it is accessed over the Internet by clicking the "Start Computer" button.

- Starting automatically

    To do this, enable the setting "Start this computer automatically as soon as it is accessed from the Internet". When the computer is accessed from the Internet, it is started automatically.

IPv4 Settings in the FRITZ!Box

The IPv4 settings of the FRITZ!Box are preset upon delivery with the following values:

Factory Settings	
IPv4 address	192.168.178.1
Subnet mask	255.255.255.0
DHCP server	Enabled

The IP address and the corresponding subnet mask yield the following values:

Network address of the subnet	192.168.178.0
Entire IPv4 address range for the computers	192.168.178.2 – 192168178254

The following IPv4 addresses cannot be assigned because they are reserved for certain purposes:

This IP address is used by the FRITZ!Box itself	192.168.178.1
This IP address is the broadcast address used to send messages into the network	192168178255

IP Address in Case of Emergency

The FRITZ!Box has a fixed IP address that cannot be changed. The FRITZ!Box always can be reached at this IP address.

Fixed IP address	169.254.1.1

For instructions about how to handle fixed IP addresses, see the section Opening the User Interface Using an Emergency IP Address from page 122.

IPv4 Address in the FRITZ!Box

Upon delivery the FRITZ!Box is assigned the following IPv4 address:

192.168.178.1

If you would like to change the IPv4 address, please read through the following sections.

When Does It Make Sense to Change the IPv4 Address?

You should change the IPv4 address of the FRITZ!Box if the following apply to your network:

- You have an existing local IPv4 network, one subnet with several computers.

- Fixed IPv4 addresses are registered in the network settings of the computer, and you do not want to or are not permitted to change these addresses.

- You want to connect the FRITZ!Box to the local IPv4 network in order to make the FRITZ!Box features available to all of the computers in the IPv4 network.

Reserved IP Addresses

The entire IP network 192.168.180.0 in the FRITZ!Box is reserved for internal purposes.

IPv4 addresses from this network may **not** be assigned to the FRITZ!Box.

DHCP Server for IPv4

The FRITZ!Box is equipped with its own DHCP server for the IPv4 network. The DHCP server is enabled by default in the factory settings. The following range of IP addresses is reserved for the DHCP server in the factory settings:

192.168.178.20 – 192168178200

This IP address can be changed as needed.

Every time the operating system on a computer connected with FRITZ!Box is started, the DHCP server assigns it an IPv4 address from the IP address range of the DHCP server.

Only one DHCP server may be active within any network.

Assigning the IP addresses via the DHCP server ensures that all of the computers connected with the FRITZ!Box are located in the same IP network.

The computers can receive their IPv4 addresses from the DHCP server only if the setting "Obtain an IPv4 address automatically" is enabled in the their IP settings. For more information, see the chapter Obtaining an IP Address Automatically from page 105.

Fixed IPv4 Addresses When the DHCP Server Is Enabled

If you would like to configure fixed IPv4 addresses on individual computers connected with the FRITZ!Box even though DHCP server is enabled, please note the following:

- The IPv4 addresses must be from the IPv4 network of the FRITZ!Box.

- The IPv4 addresses may not come from the address range of the DHCP server.

- Each IPv4 address can be assigned only once.

Disabling the DHCP Server

You can disable the DHCP server.

To make sure that all computers remain in the same IP network when the DHCP server is disabled, you must enter the IPv4 addresses manually in the computers' network settings. First disable the option "Obtain an IP address automatically" and then enter the IP address manually in the appropriate field.

In the case of the preset IPv4 address of the FRITZ!Box, the following IPv4 addresses are available for assignment to the computers:

192.168.178.2 – 192168178254

Here too: each IPv4 address can be assigned only once.

Changing Network Settings

1. Open the FRITZ!Box user interface; see .

2. Enable the advanced view.

3. Select the "Home Network / Network" menu.

4. Select the "Network Settings" page.

5. Click the "IPv4 Addresses" or "IPv6 Addresses" button, depending on the address range you would like to change.

Note that changes to the network settings in the FRITZ!Box may make it necessary to adjust the network settings of your computers so that you can continue to access the FRITZ!Box user interface.

IPv6 Settings in the FRITZ!Box

The following settings options for IPv6 are found in the advanced view in the "Home Network / Network" menu on the "Network Settings" page.

Additional IPv6 Routers in the Home Network

- IPv6 prefixes from other IPv6 routers

    You can allow the network devices connected to the FRITZ!Box to receive IPv6 prefixes announced by other IPv6 routers in the local network.

- Also announce DNSv6 server via router advertisement

    With this setting you specify that the FRITZ!Box announces the local DNSv6 server in the local network via router advertisement. Alternatively, the network devices can identify the local DNSv6 server via DHCPv6.

IPv6 Settings

Click the "IPv6 Addresses" button to configure settings for the IPv6 addresses in the local network.

Unique Local Addresses

Communication within the local network takes place via the Unique Local Addresses (ULA). If no IPv6 Internet connection is established, the network devices do not have a ULA and communication between them is restricted. For this case you can set the FRITZ!Box such that the network devices receive the ULA from the FRITZ!Box.

DHCPv6 Servers in the Home Network

The FRITZ!Box is equipped with its own DHCPv6 server. The DHCPv6 server of the FRITZ!Box is switched on by default.

The DHCPv6 server assigns the network devices their IPv6 settings. These settings are used instead of the data in the router advertisement messages. The DNS server, IPv6 prefixes or IPv6 addresses can all be assigned by DHCPv6. Define which IPv6 settings should be assigned by the DHCPv6 server.

UPnP Settings

The Universal Plug-and-Play (UPnP) service included in your FRITZ!Box provides status information about the FRITZ!Box to all connected computers. UPnP-compliant programs on these computers can receive this information and use it to display the status of the FRITZ!Box (e.g., connection status, data transmission). UPnP service thus allows you to monitor your FRITZ!Box from a connected computer.

Here is how to change the UPnP settings:

1. Open the FRITZ!Box user interface; see page 25.

2. Enable the advanced view.

3. Configure the UPnP settings in the "Home Network / Network" menu on the "Programs" page.

14.2 Obtaining an IP Address Automatically

The FRITZ!Box has its own DHCP server, which assigns IP addresses to the connected computers. The connected computers must be configured such that they can receive their IP addresses automatically. The steps for checking and adjusting this option differ among the operating systems. See the relevant section for your operating system.

If FRITZ!Box is operated in a network, no other DHCP server may be activated in this network.

Obtaining an IP Address Automatically in Windows

Open the network connections:

- In Windows 8.1 and Windows 8

  Press the Windows key and the Q key at the same time. The search menu for apps is opened. Enter "ncpa.cpl" in the search field and click enter.

Entering "ncpa.cpl" in Windows 8.1 and Windows 8

- In Windows 7 and Windows Vista

  Click "Start", enter "ncpa.cpl" in the search line of the Start menu, and press Enter.
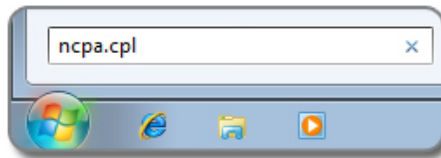
Entering "ncpa.cpl" in Windows 7

- In Windows XP

  Select "Start / Run", enter "ncpa.cpl" and then click "OK".

Configure the settings:

1. Click the network connection between the computer and the FRITZ!Box with the right mouse button and select "Properties".

2. Windows XP: Under "This connection uses the following items", select Sie "Internet Protocol (TCP/IP)".

   Windows 8.1, Windows 8, Windows 7 and Windows Vista: Under "This connection uses the following items", select "Internet Protocol Version 4 (TCP/IPv4)".

3. Click the "Properties" button.

4. On the "General" tab, enable the options "Obtain an IP address automatically" and "Obtain DNS server address automatically".
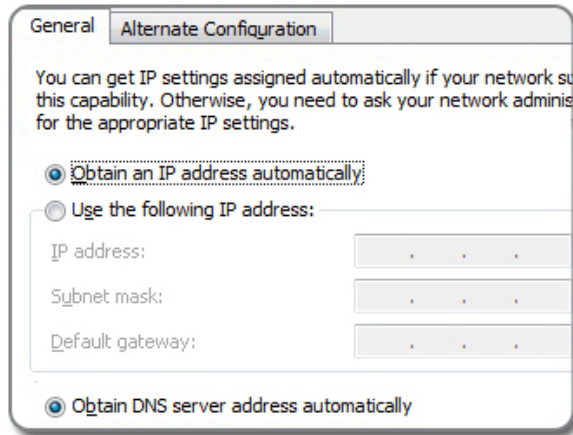
5. Click "OK" to save the settings.

6. Only in **Windows 8.1, Windows 8, Windows 7** and **Windows Vista**: Enable the options "Obtain an IPv6 address automatically" and "Obtain DNS server address automatically" for the Internet Protocol Version 6 (TCP/IPv6) as well.

The computer now receives an IP address from the FRITZ!Box.

Obtaining an IP Address Automatically in Mac OS X

1. Select the "System Preferences… " in the Apple menu.

2. In the "System Preferences" window, click the "Network" icon.

3. In the "Network" window, select the "Built-in Ethernet" entry from the "Show:" list.

4. Switch to the "TCP/IP" tab and select the "Using DHCP" option from the "Configure IPv4:" drop-down list.

5. Click "OK".

The computer now receives an IP address from the FRITZ!Box.

Obtaining an IP Address Automatically in Linux

For comprehensive information and tips on the topic of network settings in Linux, see, for example:

www.tldp.org/HOWTO/NET3-4-HOWTO-5.html

15 Connecting USB Devices to the FRITZ!Box

The FRITZ!Box has two USB ports to which you can connect various USB devices. All network devices in the FRITZ!Box home network can use these USB devices jointly and simultaneously.

This chapter describes how to share a printer in the network, which USB devices can be used in your FRITZ!Box home network, and how to use these devices safely.

15.1 Power Supply for USB Devices

You can connect USB devices with the following properties to the FRITZ!Box:

- Some USB devices require more than one USB port for operation, for instance, hard drives with a USB Y cable. Connect this type of USB device to the FRITZ!Box using a USB hub with its own power supply.

- The total current consumption of connected USB devices without their own power supply may not exceed 900 mA. Check the rating plates of the connected USB devices.

  USB devices that exceed the total current consumption of 900 mA can be connected to the FRITZ!Box using a USB hub with its own power supply.

15.2 USB Devices on the FRITZ!Box

These USB devices can be connected to the FRITZ!Box:

- You can connect up to four USB storage media like hard disks, USB flash drives or card readers.

- USB storage media must use the file systems EXT2, FAT, FAT32 or NTFS. On storage media with the FAT and FAT32 file systems you can use files up to a size of 4 GB. In the EXT2 and NTFS file systems there is no limit to the size of files that can be used.

- You can connect one standard USB printer or one all-in-one device with scanner and fax function.

- You can connect a USB hub to the FRITZ!Box and use up to four USB devices at this hub.

  You can use USB hubs with or without a separate power supply. We recommend deploying a USB hub with its own power supply if the USB devices to be connected exceed a total current consumption of 900 mA; see Power Supply for USB Devices on page 109.

- You can connect a USB modem. With a USB modem the FRITZ!Box can establish the Internet connection via the mobile communications network (UMTS/HSPA); see Internet Connection for the Mobile Network on page 39.

15.3 Using USB Devices Safely

Follow the instructions below about how to use USB devices on your FRITZ!Box.

- The FRITZ!Box can not defend the USB memory from external influences. This means that voltage spikes or drops, like those that occur during electrical storms, may lead to data losses on connected USB storage media. We recommend making regular backups of the USB memory contents to avoid any losses.

- Whenever you want to remove USB devices from the FRITZ!Box, go to the "Home Network / USB Devices" area in the FRITZ!Box user interface to remove them safely and avoid any loss of data.

15.4 Configuring Access Rights

You can protect the data on your USB storage from unauthorized access by securing the user interface of your FRITZ!Box with a password. In the "System / FRITZ!Box Password" menu you can

- configure a shared password that is requested every time anyone in your home network accesses the FRITZ!Box and the connected USB storage media.

- configure various FRITZ!Box users. You can configure a password for each FRITZ!Box user and then specify which connected USB storage media each user is allowed to access.

A USB storage medium connected to the FRITZ!Box can be reached in the home network by entering the shared FRITZ!Box password. From the Internet you can reach the USB storage medium only by logging in with your individual user name and password.

Information on the user controls of your FRITZ!Box is presented in the section Password Protection: Using FRITZ!Box Safely from page 43.

15.5   Accessing USB Memory

The participants in the home network have various possibilities for accessing the various storage media of the FRITZ!Box.

- Home network members can access the contents of connected USB memory and all other memory of the FRITZ!Box especially conveniently with FRITZ!NAS. For this FRITZ!NAS offers a graphic interface and allows data exchange by drag & drop. Read the section Managing Memory with FRITZ!NAS on page 115 for more information.

- Participants in the home network can use FTP software like FireFTP to exchange files among the FRITZ!Box storage media and workplaces.

  Alternatively, you can enter ftp://fritz.box in the address line of your Internet browser to access the storage media of the FRITZ!Box.

  If you would like to use FTP software, see the documentation of the software as well as the instructions in the Help on the FRITZ!Box user interface.

- For access to media data like music, images and videos available on the memory or on storage media of the FRITZ!Box you can enable the FRITZ!Box media server.

Suitable playback devices like TV sets, web radios, smartphones and the Windows Media Player can then call up the data from the media server for streaming.

Playback devices to be used in connection with the media server must support the UPnP AV standard. The term "DLNA" is often used to designate this support.

Enable the "Media Server" function in the FRITZ!Box user interface under "Home Network / Storage (NAS) / Options Enabled".

15.6   Sharing a USB Printer

You can connect a USB printer to the FRITZ!Box to make it available to all participants in your home network.

Setting Up a USB Printer as a Network Printer

Connect the USB printer to the USB port of the FRITZ!Box.

Setting Up a USB Printer in Windows 7, Vista or XP

1.   Click "Start / Control Panel" and select the printer category of your operating system:

    –   "Devices and Printers" (Windows 7)

    –   "Printers" (Windows Vista)

    –   "Printers and Faxes" (Windows XP)

2.   Click the printer icon with the right mouse button and select "Properties" or "Printer properties".

If the printer is not displayed, you must first install the printer drivers for this device. Consult the documentation of your printer for instructions.

3.   Switch to the "Ports" tab.

4.   Click "Add".

5.   Double-click the "Standard TCP/IP Port" entry and click "New Port", then "Next".

6.   Enter "fritz.box" in the "Printer name or IP address" field.

If the FRITZ!Box is configured as a wireless repeater or an IP client, enter here the IP address at which the FRITZ!Box can be reached within the network.

7. Enter any name you wish in the "Port name" field and click "Next".

8. Select the "Custom" option and click "Settings...".

9. Enable the "Raw" option.

10. Enter "9100" in the "Port number" field and click "OK".

11. Click "Next" and confirm with "Finish" and "Close".

12. In the "‹Printer name› properties" window, switch to the "Ports" tab.

13. Disable the "Enable bidirectional support" option and click "Apply".

The USB printer has been configured and can be used as a network printer.

Setting Up a USB Printer in Windows 8.1 or 8

1. Press the keyboard shortcut "Windows key" + "X" and select "Control Panel" from the context menu.

2. Click on "Hardware and Sound" and select "Devices and Printers".

3. In the menu bar, click "Add a printer".

4. In the "Add a printer" window, select "The printer that I want isn't listed" and then "Next".

5. Enable the option "Add a printer using TCP/IP address or hostname" and click "Next".

6. Enter "fritz.box" in the "Host name or IP address": field.

If the FRITZ!Box is configured as a wireless repeater or an IP client, enter here the IP address at which the FRITZ!Box can be reached within the network.

7. Click "Next".

8. Click "Next" and confirm with "Finish".

The USB printer has been configured and can be used as a network printer.

Setting Up a USB Printer in Mac OS X version 10.5 or higher

1. In the dock, click "System preferences".

2. Click "Print & Fax".

3. Click the "+" sign.

4. Click "IP Printer".

5. In the "Protocol:" drop-down list, select the entry "HP Jet Direct – Socket".

6. Enter "fritz.box" in the "Address:" input field.

   If the FRITZ!Box is configured as a wireless repeater or an IP client, enter here the IP address at which the FRITZ!Box can be reached within the network.

7. In the "Print Using:" drop-down list, select the printer that is connected to the USB port of your FRITZ!Box.

   If the printer is not displayed, you must first install the printer drivers for this device. Consult the documentation of your printer for instructions.

8. Click "Add".

The USB printer has been configured and can be used as a network printer.

Setting Up a USB Printer in Other Operating Systems

The names of entries or menus in operating systems not described above may be slightly different than the terms we use here.

• As the port type, select "Raw TCP".

• Enter "9100" as the port.

• Enter "fritz.box" as the printer name.

If the FRITZ!Box is configured as a wireless repeater or an IP client, enter here the IP address at which the FRITZ!Box can be reached within the network.

16 Managing Memory with FRITZ!NAS

With FRITZ!NAS you can display the data on the storage media of your FRITZ!Box in a clearly arranged interface. All participants in the FRITZ!Box home network can start FRITZ!NAS in a web browser and use it as a platform to access music, images, videos and documents in the FRITZ!Box memory.

16.1 Requirements for FRITZ!NAS

In order to use FRITZ!NAS, your computer must have a web browser installed that supports HTML5 (for instance, Internet Explorer version 9 or higher, Firefox version 17 or higher, or Google Chrome version 23 or higher).

16.2 Starting FRITZ!NAS

1. Open a web browser.

2. Enter "fritz.nas" in the address line.

FRITZ!NAS opens and displays the storage media enabled in the FRITZ!Box.

16.3 FRITZ!NAS Password Protection

Access to FRITZ!NAS and thus to the storage media of the FRITZ!Box can be protected by defining a password in the user interface. Under "System / FRITZ!Box Users / Log in to Home Network" you can

- configure a shared password that is requested every time anyone in your home network accesses the FRITZ!Box and FRITZ!NAS.

- configure various FRITZ!Box users. You can configure a password for each FRITZ!Box user and then specify which FRITZ!NAS contents each user is allowed to access.

FRITZ!NAS can be reached in the home network by entering the shared FRITZ!Box password. From the Internet you can reach FRITZ!NAS only by logging in with your individual user name and password.

Information on the password protection of your FRITZ!Box is presented in the section Password Protection: Using FRITZ!Box Safely from page 43.

17   Assigning FRITZ!Box a Name

You can assign an individual name for your FRITZ!Box in the FRITZ!Box user interface. The name is set up under **"Home Network / FRITZ!Box Name"** and appears in the following areas of your home network display:

- Name of the wireless radio network (SSID)

- Name of the guest radio network (SSID)

- Name of the working group released for home network sharing

- Name of the media server

- Individualized FRITZ!Box name for MyFRITZ!

- Push service sender name

18   Configuring Internet Access for Guests

With the FRITZ!Box you can provide houseguests with an Internet connection of their own. At this guest access they can surf the web with their own devices, but cannot access the contents of your home network.

18.1   Requirements

The guest access in the FRITZ!Box can be configured and provided only if the FRITZ!Box establishes the Internet connection itself.

If the FRITZ!Box is operated as an IP client, no guest access can be configured.

18.2   Wireless Guest Access: Private Hotspot

For your guests you can configure a wireless guest access. The wireless guest access is your private hotspot.

Features of the Wireless LAN Guest Access

- At the wireless guest access your guests can log in with their own smartphones, tablets, laptops or other network devices.

- Guest devices can surf the Internet.

- Guest devices have no access to your home network.

- The guest access can be disabled automatically.

- The guest access can use push service to notify you about all devices registering and deregistering.

- The access profile "Guest" is set for the wireless guest access. This access profile can be edited in the "Internet / Filters" menu on the "Access Profiles" tab.

Configuring Wireless Guest Access

1. Open the FRITZ!Box user interface; see page 25.

2. Select the "WLAN / Guest Access" menu and enable guest access.

3. Assign a name for the guest wireless network (SSID) and enter a network key under "Security".

This concludes the configuration of your guest access. Now guests can register their wireless devices with the FRITZ!Box.

Registering a Wireless Device with the Wireless Guest Access

1. Your guest starts the wireless LAN software of her or his wireless device and searches for the guest network.

2. Your guests authorize themselves using the network key you assigned.

The wireless LAN connection will be established.

18.3   Configuring Guest Access on the LAN 4 Port

For guests you can configure the network port "LAN 4" as a guest access.

Features of the LAN Guest Access

• Guests can connect their laptops to the guest access with a network cable.

• Guest devices can surf the Internet.

• Guest devices have no access to the home network.

• The access profile "Guest" is set for the LAN guest access. This access profile can be edited in the "Internet / Filters" menu on the "Access Profiles" tab.

Configuring Guest Access

Set up the guest access as follows:

1. Open the FRITZ!Box user interface; see page 25.

2. In the "Home Network / Network" menu, select the "Network Settings" page.

3. In the "Guest Access" area, check the box in front of the "Guest access enabled for LAN 4" option.

4. Click "Apply".

19 Help in Case of Errors

For more help, see the AVM Knowledge Base in the Internet: en.avm.de/service/

19.1 The User Interface Does Not Open

If the FRITZ!Box user interface cannot be opened, this can have various causes.

Work through the following steps in sequence until the error has been resolved.

Entering http://fritz.box in the Web Browser

Enter http://fritz.box in the web browser instead of fritz.box.

Google Chrome, for instance, performs a Google search if the address of the FRITZ!Box is not known or was entered incompletely.

Restarting the FRITZ!Box

1. Disconnect the FRITZ!Box from the power supply.

2. Wait about five seconds before reconnecting to the power supply.

3. Wait until the LEDs "Power" and "WLAN" (only if wireless LAN is switched on) light up.

The FRITZ!Box is ready for operation again.

Clearing the Cache of your Web Browser

If the web browser shows only a blank white page, empty the cache:

Firefox

1. Click the "Menu" button and select "History / Clear Recent History...".

   Or click "History" in the menu bar and select "Clear Recent History...".

2. In the "Clear Recent History" dialog, select "Everything", and under "Details", check only the "Cache" option.

3. Click "Clear Now".

Internet Explorer

1. Click on the "Tools" menu and select "Internet options".

2. On the "General" tab, click the "Clear History" button.

3. Enable the "Temporary Internet files" option and click "Delete".

Google Chrome

1. Click on the Chrome menu ("Customize and Control Google Chrome" button) and select "History / Clear Browsing Data".

2. Select "the beginning of time", and below it only the option "Empty the cache".

3. Click "Clear browsing data".

Other Web Browsers

If you use a different web browser, see the Help for your browser for instructions on how to clear the cache.

Check the Proxy Settings of the Web Browser

If a proxy server is enabled in your web browser, the address of the FRITZ!Box must be entered as an exception. Check your web browser settings.

Firefox

1. Click the orange Firefox button and select "Settings / Settings".

   Or click on "Tools" in the menu bar and select "Settings".

2. Select "Advanced / Network".

3. Under "Connection", click the "Settings... button."

4. If the option "Manual proxy configuration" is enabled, enter "fritz.box" in the "No Proxy for:" field and then click "OK".

If the manual proxy configuration is not enabled, click "Cancel".

Internet Explorer

1. Click on the "Tools" menu and select "Internet options".

2. Switch to the "Connections" tab and click the "LAN settings" button.

3. If the "Use a proxy server for your LAN" option is enabled, click on "Advanced". Under "Exceptions" enter the address "fritz.box" and click "OK".

If no proxy server is used, click "Cancel".

Google Chrome

Check whether the use of a proxy server is enabled. If so, enter "fritz.box" as an exception in the proxy server settings.

Google Chrome uses the proxy settings of your operating system (Windows or Mac OS). For more information, go to Google Chrome Help and enter the keyword "network settings".

Other Web Browsers

Check whether the use of a proxy server is enabled. If so, enter "fritz.box" as an exception in the proxy server settings.

For more information on the proxy settings, see the Help for your web browser.

Configuring the Computer's Network Adapter

On your computer, enable the setting "Obtain an IP Address Automatically" for the network adapter used to connect to the FRITZ!Box. For instructions, see .

Opening the User Interface Using an Emergency IP Address

The FRITZ!Box has an "emergency IP address" (169.254.1.1) at which it can always be reached. You can use this IP address as follows:

1. Connect your computer to the "LAN 2" port of the FRITZ!Box using a LAN cable.

2. If your computer is already connected with the FRITZ!Box over wireless LAN, clear the wireless connection.

3. Make sure that the computer obtains its IP address automatically; see page 105.

4. Clear all other connections between your FRITZ!Box and other network devices.

5. In the web browser, enter the address 169.254.1.1.

6. When the FRITZ!Box user interface is displayed, enable the DHCP server of the FRITZ!Box:

   In the user interface, select "Home Network / Network / Network Settings". Click the "IPv4 Addresses" button, enable the option "Enable DHCP server" and click "OK".

19.2 Cannot Establish a Wireless LAN Connection

If you cannot establish a wireless LAN connection between your computer and the FRITZ!Box, this may be due to a variety of causes.

Work through the following steps in sequence until the error has been resolved.

Switching On the Computer's Wireless LAN Adapter

The wireless LAN adapter in your computer must be ready for operation. On many notebooks the built-in wireless LAN adapter can be switched on by pushing a button or entering a key combination.

For more information, see the manual of your computer.

Announcing the Name of the Wireless Radio Network

If the wireless LAN software on your computer cannot find the wireless radio network of the FRITZ!Box, make the following setting in the FRITZ!Box:

1. Connect a computer to the FRITZ!Box with a network cable; see page 19.

2. Open the FRITZ!Box user interface; see page 25.

3. Select "WLAN / Radio Network".

4. Enable the option "Name of the radio network visible".

5. Click "Apply".

6. Remove the network cable and establish a connection via wireless LAN.

Entering the Correct Network Key

If you establish the wireless connection manually, enter the correct network key, which is found in the user interface of your FRITZ!Box:

1. Connect a computer to the FRITZ!Box with a network cable; see page 19.

2. Open the FRITZ!Box user interface; see page 25.

3. Select "WLAN / Security".

4. Take note of the network key or click "Apply" and print out the wireless LAN security settings.

19.3   Wireless LAN Connection Interrupted

If the wireless LAN connection between your computer and the FRITZ!Box is disrupted, this may be due to a variety of causes. Work through the following steps in sequence until the error has been resolved.

Positioning the FRITZ!Box and Wireless Devices Correctly

Often all that is needed is to position the FRITZ!Box and wireless devices in different locations to improve the wireless LAN connection:

- Do not set up the FRITZ!Box in the corner of a room.

- Do not set up the FRITZ!Box directly next to or beneath an obstacle or a metal object (like a cabinet or radiator).

- Position the FRITZ!Box and your wireless devices so that there are as few obstacles between them as possible.

Configuring Automatic Radio Channel Selection

Configure automatic selection of the radio channel in the FRITZ!Box. Then the FRITZ!Box will automatically select a radio channel with as little interference as possible.

1. Open the FRITZ!Box user interface; see page 25.

2. Select "WLAN / Radio Channel".

3. Enable the option "Set radio channel settings automatically (recommended)".

4. Click "Apply".

20 Taking FRITZ!Box Out of Operation

In this chapter you receive tips and recommendations for taking the FRITZ!Box out of operation.

20.1 Loading Factory Settings

When the factory settings are restored to the FRITZ!Box, all of the settings in the FRITZ!Box are restored to their condition upon delivery. This way you can delete incorrect settings that prevent the FRITZ!Box from functioning properly.

Restoring the factory settings is also recommended if you would like to pass the FRITZ!Box on to another user.

Resetting the FRITZ!Box has the following effects:

- All settings you made in the FRITZ!Box will be deleted.

- The internal memory of the FRITZ!Box will be deleted. Received faxes and messages on the answering machine will also be deleted.

- The network key in the factory settings will be activated again.

- The IP configuration of the factory settings will be restored.

Preparing to Load Factory Settings

Before loading the factory settings of your FRITZ!Box, save your settings and FRITZ!Box data. Work through the following steps:

Saving FRITZ!Box Settings

Before loading the factory settings, save all of the settings you made in your FRITZ!Box to a backup file. With this backup file you can restore your settings to the FRITZ!Box at any time or load them to another FRITZ!Box. For more information on this, see the section .

Saving Data from Internal Memory

1. Open the FRITZ!Box user interface; see page 25.

2. Select "FRITZ!NAS" in the menu of the FRITZ!Box.

    The FRITZ!NAS interface is opened.

3. Click here with the mouse to select the data you want to save.

4. Click the ⬇ "Copy FRITZ!NAS to My Device" icon in the FRITZ!NAS toolbar and confirm by clicking "OK".

    The selected data are copied to a ZIP file in the download order you specified.

This concludes the saving of your data from the internal memory of the FRITZ!Box.

Loading the factory settings

Before loading factory settings, we recommend saving the settings configured on your FRITZ!Box in a backup file; see page 33.

1. In the FRITZ!Box user interface, select the "System / Backup" menu.

2. Select the "Factory Settings" tab.

3. Click the "Load Factory Settings" button.

The FRITZ!Box is reset to its factory settings. All settings made during operation will be overwritten.

20.2   Uninstalling Supplementary Software

Additional software for the FRITZ!Box is available on the web pages of AVM at avm.de/en/download.

If you have installed supplementary programs on one or more computers, uninstall this software using the control panel of your Windows operating system.

Uninstalling Programs in Windows 8.1 or 8

1.   Press the Windows key 🪟 and the X key at the same time.

     A menu is opened that contains all of the important functions of Windows 8 or 8.1, respectively.

2.   Click on the "Programs and Features" entry.

     The "Uninstall or change a program" list shows all of the programs installed on your computer.

3.   Mark the AVM program you want to remove in the list.

4.   Click the "Uninstall" button.

The program will be removed.

Uninstalling Programs in Windows 7

1.   Open "Start / Control Panel / Programs".

2.   Under "Programs and Features", click "Uninstall a program".

3.   Mark the AVM program you want to remove in the list.

4.   Click the "Uninstall/Change" button.

The program will be removed.

Uninstalling Programs in Windows Vista

1.   Open "Start / Settings / Control Panel / Programs and Functions".

2.   Mark the AVM program you want to remove in the list.

3.   Click the "Uninstall/Change" button and confirm with "Continue".

The program will be removed.

Uninstalling Programs in Windows XP

1. Open "start / Control Panel / Add or Remove Programs". Make sure that the "Change or Remove Programs" button is selected in the column at left.

2. Mark the AVM program you want to remove in the list of "Currently installed programs".

3. Click the "Change/Remove" button.

The program will be removed.

21   Technical Specifications

Facts worth knowing: Here you will find comprehensive technical data on your FRITZ!Box 3490.

21.1   Ports and Interfaces

- VDSL/ADSL modem for use with ADSL/ADSL2/ADSL2+ compliant or ITU G.992.1, ITU G.992.3, ITU G.992.5 (Annex B or J) or VDSL2 compliant with ITU G.993.2

- Four LAN ports via RJ45 sockets (standard Ethernet, 10/100/1000 Base-T)

- Two USB host controllers (USB version 3.0/2.0)

- Wireless access point with support for wireless LAN radio networks

  - IEEE 802.11a – 54 Mbit/s

  - IEEE 802.11b – 11 Mbit/s

  - IEEE 802.11g – 54 Mbit/s

  - IEEE 802.11n – 450 Mbit/s

  - IEEE 802.11ac – 1300 Mbit/s

21.2   Router Functions

- Router

- DHCP server

- Firewall with IP masquerading/NAT

- IPv4 and IPv6

- Parental controls and filter lists

- Port Forwarding

- Dynamic DNS

- VPN

21.3   User Interface and Display

- Configuration and status messages via a web browser on a connected computer

- Five LEDs indicate the condition of the device

21.4   Device Properties

- Dimensions (W x D x H): circa 245 x 55 x 175 mm

- FRITZ!OS can be updated

- Conforms to CE standards

- Ambient conditions

    - operating temperature: 0 °C – +40 °C

    - storage temperature: -20 °C – +70 °C

    - relative humidity (operation): 10% – 90%

    - relative humidity (idle): 5% – 95%

- Supply voltage: 230 V / 50 Hz

- Maximum power consumption: approx. 20 W

- Average power consumption: approx. 8 W

    The average power consumption was determined at room temperature (23 °C to 27 °C) with the following load:

    - DSL connection active

    - wireless LAN on; no devices registered via wireless LAN

    - one network device connected to a LAN port; no data transfer; other LAN ports not in use

21.5   Cables

Network Cable (yellow)

Illustration

Use

The network cable is used to connect computers and network devices to the FRITZ!Box 3490.

- AVM recommends using a network cable no more than 100 meters long.

- Additional network cable is required if you would like to use all of the FRITZ!Box 3490 network ports.

Extension

You can extend one or both ends of the network cable. You will need the following components to extend the cable:

- Standard Cat-5 network cable, type STP (shielded twisted pair)

    - When components of a category smaller than Cat 5 are used, reduced transmission rates may result.

    - You can use both straight cables and crosslink cables.

- 1 standard RJ45 CAT-5 double coupling with a 1:1 pinout

All components are available from specialized vendors.

Replacement

The network cable is a standard cable.

- As a replacement, use a standard Cat-5 network cable, type STP (shielded twisted pair)

Replacement cable is available from specialized vendors.

DSL cable

Illustration
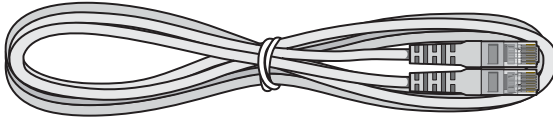
Use

The DSL cable is for connecting the FRITZ!Box to a DSL or VDSL line without a landline.

Extension

You will need the following components to extend the length of the cable on the end with the RJ45 connector:

- Standard Cat-5 network cable, type STP (shielded twisted pair)
- Standard RJ45 CAT-5 double coupling

Both components are available from specialized vendors.

Replacement

The DSL cable is a standard cable.

- As a replacement cable, use a DSL cable with two RJ45 connectors.

Replacement cable is available from specialized vendors.

22 Customer Service

Be it product documentation, frequently asked questions, tips or support: This chapter presents information on all important service topics.

22.1 Documentation on the FRITZ!Box

To take advantage of all commands and features of your FRITZ!Box, consult the following documentation:

Help

In the FRITZ!Box user interface you can open the comprehensive Online Help by clicking the "Help" icon and the "Help" buttons.

Manual

The PDF file of the manual can be opened and downloaded from the Internet at the following address:

avm.de/en/service/manuals

Choose the "FRITZ!Box" product group and then your "FRITZ!Box 3490". The PDF is opened.

22.2 Information in the Internet

On its website AVM presents comprehensive information on your AVM product.

Videos on the FRITZ!Box

Videos on many of the FRITZ!Box functions are available, showing animated demonstrations of how to set up the individual functions. The videos can be viewed at the following address:

avm.de/en/service/fritz.clips

AVM Knowledge Base

In our AVM Knowledge Base you can find answers to your questions and specific solutions to your problems. The AVM Knowledge Base is located in the area "Service" of the AVM website:

en.avm.de/service/

22.3   Feedback on FRITZ!Box

In various places in the user interface, the FRITZ!Box offers you the opportunity to send your concrete feedback to AVM. Your feedback helps us to continually improve the FRITZ!Box.

When you submit feedback, only the technical data and **no personal data** are transmitted to AVM. These data are used for the exclusive purpose of product improvement. A corresponding message appears in the Event Log, stating that the feedback was sent to AVM.

Automatically Sending Error Reports to AVM

In the case of serious errors, this service generates a report on the problem that occurred and automatically sends this error report to AVM. The error report helps improve the stability of FRITZ!OS.

Settings options for automatically sending error reports are located on the "Contents / AVM Services" page of the FRITZ!Box user interface.

Evaluating the DSL Connection

On the "Internet / DSL Information / Feedback" page you can evaluate your DSL connection. This makes it possible to optimize your DSL performance with upcoming FRITZ!OS updates.

Evaluating the Wireless LAN Connection

On the "WLAN / Radio Network / Known Wireless LAN Devices / Feedback" page you can evaluate your satisfaction with the wireless LAN connection between the FRITZ!Box and the wireless device. This information helps AVM optimize the wireless LAN properties of the FRITZ!Box.

22.4   Assistance from the Support Team

If you have problems with FRITZ!Box, proceed as follows:

1. If you have questions about starting operation of your FRITZ!Box, please consult the following chapters again:

    –   Before You Connect the FRITZ!Box from page 14

    –   Connecting the FRITZ!Box from page 16

    –   Connecting a Computer with a Network Cable from page 19

    –   Connecting Computers with the FRITZ!Box over Wireless LAN from page 21

2. If you have any problems, for instance in establishing connections, read the section Help in Case of Errors from page 119.

3. Read our tips from the AVM Knowledge Base in the "Service" area.

    en.avm.de/service/

    This site contains answers to questions our customers have frequently asked the Support team.

Please take advantage of the information sources described above before contacting AVM support.

Support by e-mail

You can send us an English-language e-mail request at any time using the "Service" area of our website. You can reach the service area at avm.de/en/service

1. Select the product group and your product for which you need support from the "Support" area.

    You will receive a selection of FAQs.

2. If you need more help, click the "Contact Support" button to open the e-mail support form.

3. Fill out the form and send it to AVM by clicking the "Submit support request" button.

Our Support team will respond by e-mail as quickly as possible.

22.5   Manufacturer's Warranty

We offer a manufacturer's warranty of 5 years on the hardware of this original product. The warranty period begins with the purchase date from the first end user. Compliance with the warranty period can be proven by submission of the original invoice or comparable documents. This warranty does not restrict your warranty rights based on the contract of sale or other statutory rights.

Within the warranty period, we will remove defects to the product which are demonstrably due to faults in materials or manufacturing. Our warranty does not cover defects which occur due to incorrect installation, improper use, non-observance of instructions in the user manual, normal wear and tear or defects in the environment of the system (third-party hardware or software). We may, at our discretion, repair or replace the defective product. Claims other than the right to the removal of defects which is mentioned in these terms of warranty are not constituted.

We guarantee that the software conforms with general specifications, not, however, that the software meets your individual requirements. Delivery costs will not be reimbursed. Products which have been replaced revert to our ownership. Claims recognized under warranty entail neither an extension or recommencement of the warranty period. If we reject a warranty claim, this claim lapses no later than six months after being rejected by us.

This warranty shall be governed by German substantive law, to the exclusion of the United Nations Convention on Contracts for the International Sale of Goods (CISG).

Legal Notice

Legal Notice

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- process, disassemble, reverse engineer, translate, decompile or in any other manner open the software and subsequently copy, propagate or make the software publicly accessible in any other manner.

The licensing conditions are presented in the FRITZ!Box user interface under the "Legal Notice" heading.

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The information in this documentation and the software are subject to change without notice for the purpose of technical improvement.

AVM Audiovisuelles Marketing und Computersysteme GmbH Alt-Moabit 95 D 10559 Berlin Germany	AVM Computersysteme Vertriebs GmbH Alt-Moabit 95 D 10559 Berlin Germany	AVM in the Internet: avm.de/en

Declaration of CE Conformity

AVM declares herewith that the device is compliant with the basic requirements and the relevant rules in directives 1999/5/EC or 2004/108/EC and 2006/95/EC, 2009/125/EC and 2011/65/EU.

The declaration of CE conformity is available at http://en.avm.de/ce.

Disposal Information

In accordance with European regulations, the FRITZ!Box 3490, as well as all devices and electronic components contained in the package, may not be disposed with household waste.

After use, please dispose of FRITZ!Box 3490 and all electronic components and devices included with delivery at a collection point in your local community for the disposal of electric and electronic appliances.
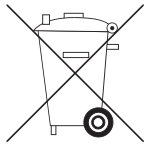
Symbol for the separate collection of electric and electronic devices

Drilling Template

A drilling template is presented below. Use the drilling template as a guide to mark the holes needed to mount the FRITZ!Box on a wall.

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