Vodafone
Anlagen-Anschluss Plus

PlusBox 301 user manual

vodafone

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Table of contents

1 Before you begin 5
1.1 Important information 5
1.2 Prerequisites 5
1.3 Scope of delivery 6
1.4 Safety notes 6
1.5 Intended use 6
1.6 Orientation 7
2 Anlagen-Anschluss Plus via DSL 8
2.1 Operation with terminal devices other than PlusBox 301 8
2.2 Connecting PlusBox 301 8
2.2.1 IP Voice only connection 8
2.2.2 IP Voice + Data connection 10
2.3 Light indicators (LEDs) on PlusBox 301 12
3 PlusBox 301 user interface 14
3.1 Page structure and navigation 14
3.2 Page types and user interface control elements 15
3.2.1 Status overview page 15
3.2.2 Simple configuration page 16
3.2.3 Complex configuration page 17
3.3 Additional user interface control elements 18
4 Functional overview of PlusBox 301 19
5 Setting up PlusBox 301 for Voice service 21
5.1 Setting up the configuration computer 21
5.2 Activating and setting up PlusBox 301 22
6 Configuring PlusBox 301 for Internet access 28
6.1 Overview 28
6.2 Internet 29
6.2.1 DSL (Basic and Expert) 29
6.2.2 Firewall (Expert) 30
6.2.3 Port Mapping (Expert) 32
6.2.4 Exposed Host (Expert) 34
6.3 WiFi 35
6.3.1 General WiFi Settings (Basic and Expert) 36
6.3.2 WPS (Basic and Expert) 37
6.3.3 MAC Filter (Expert) 39
6.3.4 Advanced Settings (Expert) 41
6.4 Settings 42
6.4.1 PlusBox Password (Basic and Expert) 42
6.4.2 Firmware Update (Basic and Expert) 43
6.4.3 Configuration (Expert) 43
6.4.4 LAN Network (Expert) 46
6.4.4.1 LAN Network (Expert) 47
6.4.4.2 Voice LAN Network (Expert) 48
6.4.4.3 WiFi and Guest WiFi (Expert) 50
6.4.5 PlusBox Reset & Reboot (Expert) 51

6.5 Status & Help ... 52
6.5.1 PlusBox Status (Basic and Expert) ... 52
6.5.2 Telephony, Voice LAN Network ... 55
6.5.2.1 IP Voice only connection ... 55
6.5.2.2 IP Voice + Data connection ... 55
6.5.3 Diagnostic program (Expert) ... 56
6.5.4 About (Basic and Expert) ... 57
7 Troubleshooting ... 58
7.1 Error messages ... 58
7.1.1 Incomplete Modem Installation Code (MIC) ... 58
7.1.2 Invalid Modem Installation Code (MIC) ... 58
7.1.3 Invalid user name or password or password ... 58
7.1.4 Captcha incorrectly adopted ... 58
7.1.5 Activation failed ... 59
7.1.6 Configuration page is not displayed ... 59
7.2 No WiFi connection to the user interface ... 59
8 Customer service ... 60
9 Configuring security settings (examples) ... 61
9.1 LAN default configuration (IP Voice + Data) ... 61
9.2 Voice LAN default configuration (IP Voice + Data only) ... 63
9.3 Scenario 1: HTTP server in the LAN ... 64
9.4 DMZ/Exposed Host default configuration after activation ... 66
9.5 Scenario 2: Software download via DMZ host ... 67
9.6 Scenario 3: DMZ host uses Internet NTP server ... 69
9.7 Scenario 4: Web server in the DMZ ... 71
9.8 Scenario 5: VPN router in the LAN ... 72
10 Glossary ... 77
11 Index ... 79
12 List of figures ... 83
13 List of tables ... 85

1 Before you begin

This user manual helps users with basic PC and hardware knowledge to install their PlusBox 301 for use with Anlagen-Anschluss Plus. Via PlusBox 301, you can use a PBX based on Voice over IP (VoIP) on your DSL connection.

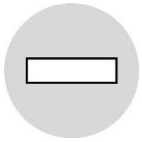
1.1 Important information

Important information in this manual is marked by icons in the margin with the following meanings:

WARNING

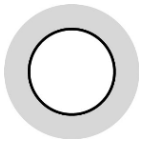
You must always observe this instruction to prevent yourself or others from risk of injury and danger to life!

CAUTION



You must follow the instructions to prevent possible injury to yourself or others.

ATTENTION



You must observe this instruction to ensure the functionality of your hardware or software, avoid incorrect configurations or prevent data loss.

NOTE

Important general or supplementary information on a specific topic.

1.2 Prerequisites

You have received the welcome letter containing the **Modem Installation Code (MIC).**

All network components to be connected must have at least a **100/1000 Mbit/s Ethernet network interface.**

Your configuration computer has an up-to-date **browser** installed.

1.3 Scope of delivery

You will receive a PlusBox 301 from Vodafone, which must include the following parts:

- 1 PlusBox 301, contains label with password on the underside
- 1 purple-coloured DSL cable with RJ-11 plug to TAE-F plug (for telephone socket)
- 1 purple-coloured DSL cable with RJ-11 plugs on both sides
- 1 yellow network cable with RJ-45 plugs on both sides
- 1 plug-in power supply unit

NOTES

Note that PlusBox 301 remains the property of Vodafone and is only leased. Any maintenance may only be carried out by Vodafone or companies authorised by Vodafone.

The PBX and its connection cables are not included in the scope of delivery.

1.4 Safety notes

WARNING

Avoid injuries – read the documentation!
Before starting the hardware installation for Anlagen-Anschluss Plus, be sure to read this user manual and the manufacturer's documentation for the PBX and other connected terminal devices in order to avoid injury or damage to equipment!

Note the following:

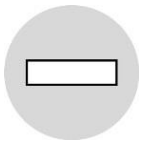
WARNING

- **Never open the housing of PlusBox 301 – risk of fatal electric shock!**
  If a repair is required, only Vodafone or persons authorised by Vodafone may carry out the repair.
- During a thunderstorm, do not install PlusBox 301 and do not plug in or unplug any cables – risk of fatal electric shock!
- Do not use damaged cables – risk of fatal electric shock!

1.5 Intended use

PlusBox 301 connects a PBX with the Vodafone Voice service. It also works as a router to which you can connect network devices.

CAUTION



- PlusBox 301 and other devices must be operated free-standing in dry, low-dust indoor areas and with a mains voltage of 230 V at 50 Hz.
- Lay cables so that nobody can step on them or trip over them.
- If you clean the housing, use a dry cloth. Avoid direct contact with water. In particular, the device must never be submerged!
- Position the device so that it is not directly in the sun.

1.6 Orientation

The following Chapter 2 shows you how to **connect** PlusBox 301 to the telephone socket, to your PBX and network devices. It also explains the meaning of the **LED**s on the PlusBox.

Chapter 3 gives you an overview of the PlusBox 301 **user interface**, which you can access via your web browser.

Chapter 4 provides you with a **function overview** that links directly to the respective sections.

Chapter 5 describes the **activation** and **initial setup of** PlusBox 301 for your IP Voice service, whereas Chapter 6 explains the detailed **configuration** of the Internet, LAN, Voice LAN and WiFi connection.

If you are unable to access the user interface, cannot connect to the PBX or receive **error messages** during activation and configuration, you can refer to Chapter 7 for **possible solutions**.

Information on contacting **customer support can be found** in Chapter 8.

Chapter 9 contains a series of **examples** for certain **security-relevant network configurations** that explain the firewall, port mapping and DMZ/Exposed Host functions and their interaction in more detail. There is also a configuration example for a **VPN tunnel** established on a connection to services in the cloud.

Chapter 10 contains a **glossary** of the most important terms used in this user manual. Chapter 11 features an **index**, and Chapters 12 and 13 provide a **list of figures** resp. a **list of tables**.

2 Anlagen-Anschluss Plus via DSL

PlusBox 301 supports the following **connection types**:

- **IP Voice only** (see Section 2.2.1)
- **IP Voice + Data** (see Section 2.2.2)

This chapter begins with a schematic representation of the overall connection from the TAE socket to your PBX with connected telephone terminals. We then use a photo of PlusBox 301 to show you which devices you need to connect to which port. The colours of the connection lines in this detailed illustration correspond to the colours of the cables supplied. **Before you put PlusBox 301 into operation, you should check the cabling between the devices**.

2.1 Operation with terminal devices other than PlusBox 301

If you want to use a terminal device for your connection other than PlusBox 301 provided by Vodafone, you will find all the necessary data in your **welcome letter** and in your **VoiceManager** Administration Portal at **www.vodafone.de/aaplus-support**.

If necessary, please check in advance with the manufacturer of your terminal device whether full utilisation of all functions is possible. Full feature support for the connection can only be guaranteed with the terminal devices provided by Vodafone.

2.2 Connecting PlusBox 301

NOTES

For simplification, only one telephone terminal is shown in each of the following illustrations. To connect your telephone terminals to the PBX, please refer to its manufacturer's documentation.

2.2.1 IP Voice only connection

This connection type is intended **exclusively** for connecting an **IP PBX** to your PlusBox so that you can use the **Voice service**. LAN and WiFi are not available. PlusBox's LAN interfaces ETH 0/0 to ETH 0/3 are only used to connect the configuration computer for setup and activation of your PlusBox.

ATTENTION

You must select **IP mode** in the **VoiceManager Portal** for this connection to function correctly. **Do not select** ISDN mode!

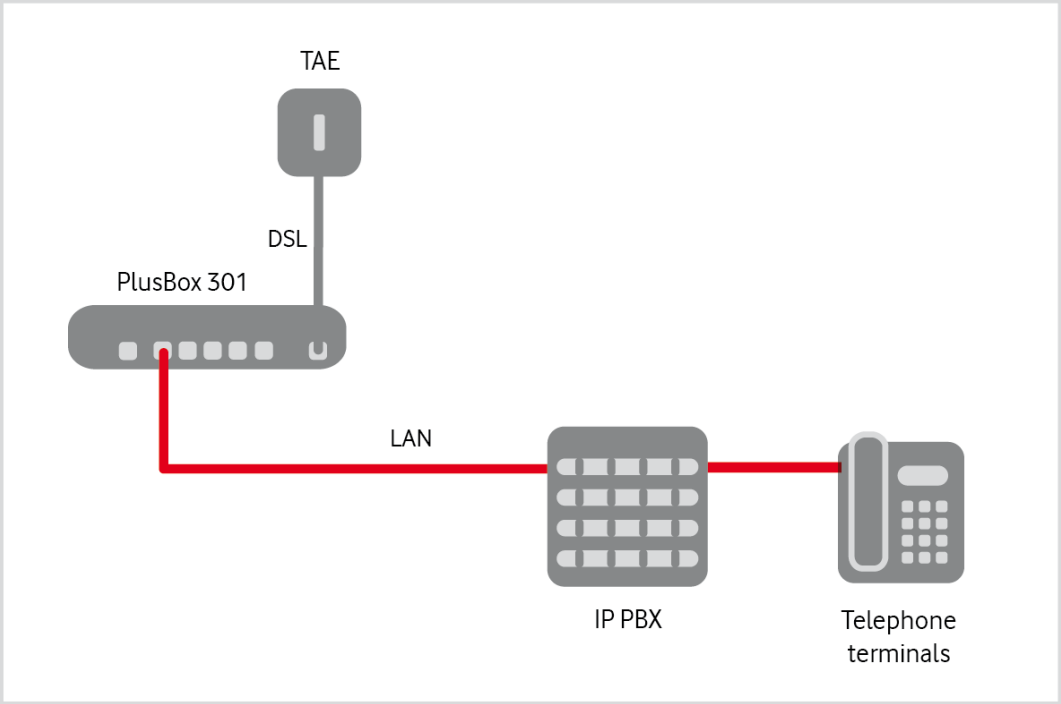


Fig. 1: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice only – Overview

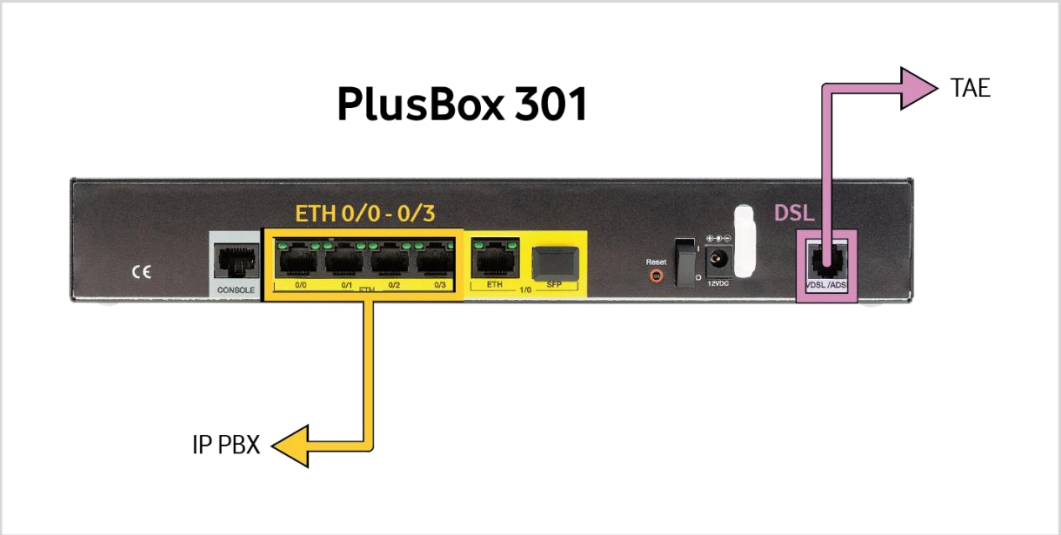


Fig. 2: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice only – Detail

Proceed as follows for connecting the hardware:

1. Connect the **VDSL/ADSL port of PlusBox 301** to the **F-coded socket of your TAE** using the purple DSL cable. The socket is usually labelled with either the letter "**F**" or with a **telephone symbol that is not crossed out**.
2. **Set up PlusBox 301 for the Voice service**. How to do this is described in Chapter 5.
3. Connect your **IP PBX** to one or more of the **ports ETH 0/0 to ETH 0/3 of PlusBox 301**. (The cables required for this are not part of the Vodafone scope of delivery but should be included in the scope of delivery of your PBX).
4. Connect the **telephony terminals** (telephone, fax, answering machine) to their ports as described in the manufacturer's documentation for your **IP PBX.**
5. If necessary, connect a network device to the **ETH 1/0 port** that is to serve as an **Exposed Host**. If the Exposed Host function is deactivated (see Section 6.2.4), this port is switched off.

2.2.2 IP Voice + Data connection

This connection type allows you to connect an IP PBX as well as LAN computers to your PlusBox, directly or via a switch. WiFi is also available.

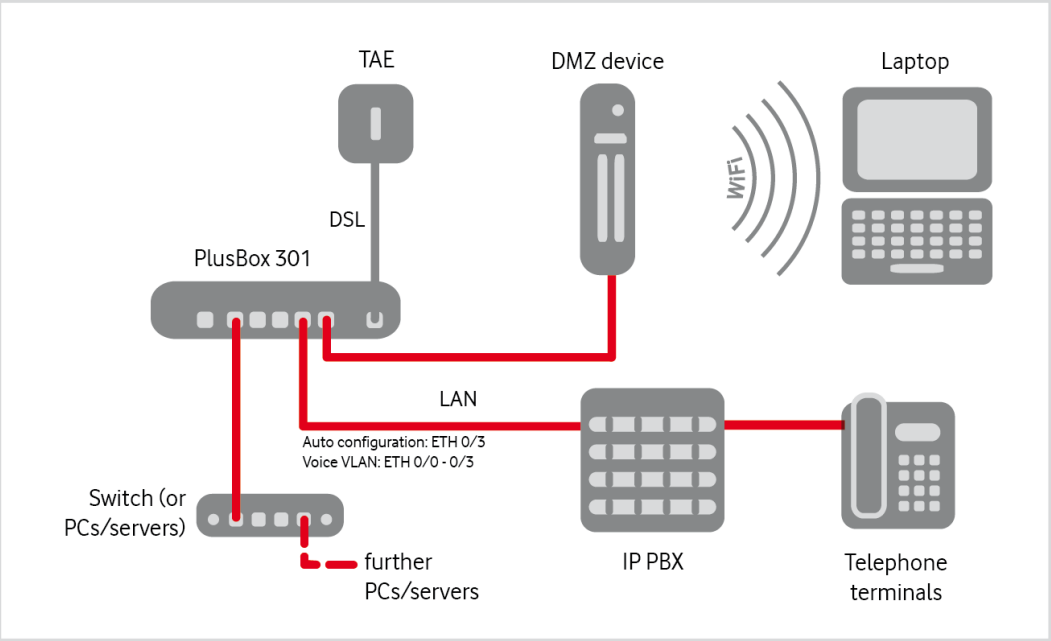


Fig. 3: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice + Data – Overview

You have two **configuration options** for your Voice LAN: **automatic configuration** via the PlusBox or **manual VLAN configuration** with the corresponding VLAN ID, which depends on the configuration of your IP PBX.

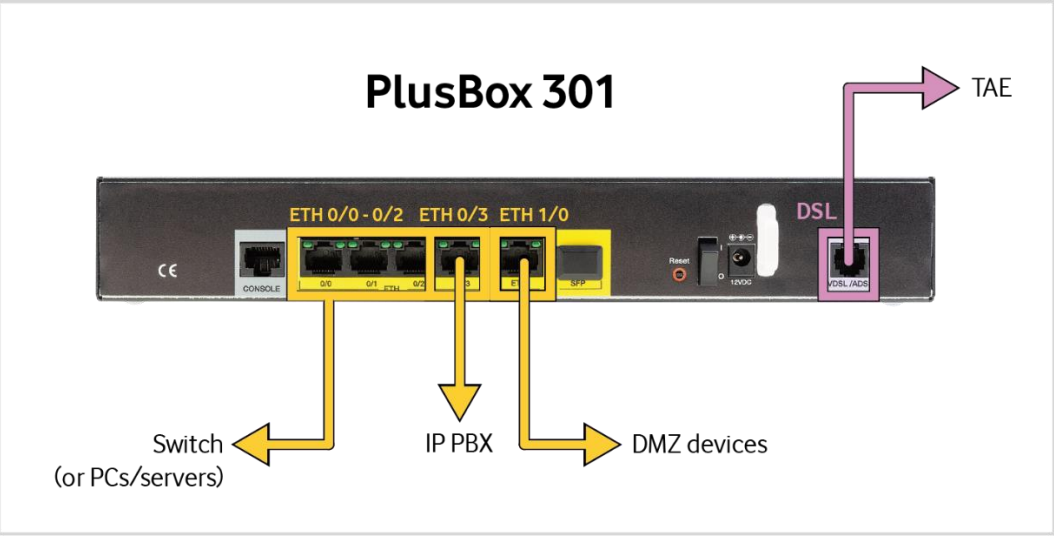


Fig. 4: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice + Data – Auto configuration detail

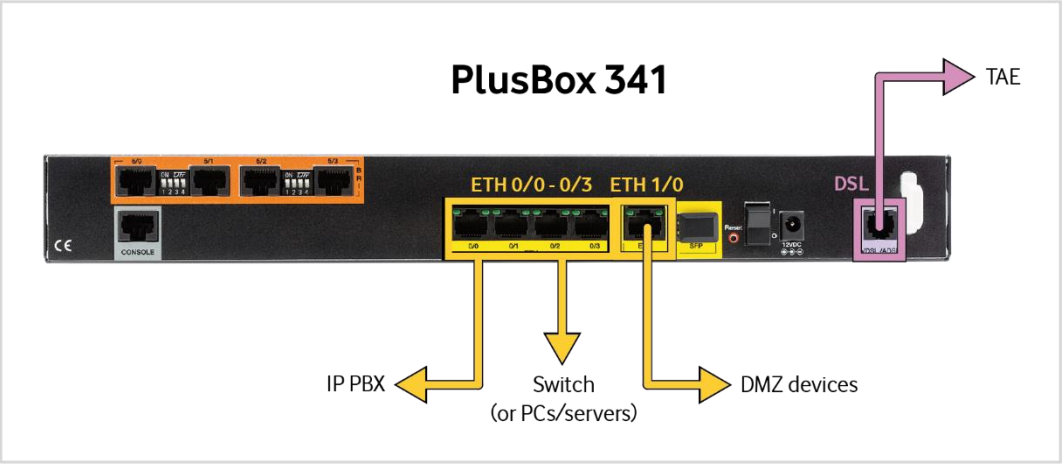


Fig. 5: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice + Data – VLAN config. detail

Proceed as follows for connecting the hardware:

1. Connect the **VDSL/ADSL port of PlusBox 301** to the **F-coded socket of your TAE** using the purple DSL cable. The socket is usually labelled with either the letter **"F"** or with a **telephone symbol that is not crossed out**.
2. **Set up PlusBox 301 for the Voice service.** How to do this is described in Chapter 5.
3. Connect your **IP PBX** to **PlusBox 301** as follows:
   - to port **ETH 0/3** – the Voice LAN is **configured automatically**

     or
   - to one of the ports **ETH 0/0-0/3** – you configure a **VLAN** for the Voice LAN and assign a VLAN ID to it
4. Connect the **telephony terminals** (telephone, fax, answering machine) to their ports as described in the manufacturer's documentation for your **IP PBX.**
5. Connect **network devices** such as PCs and servers directly or via a switch to the other **ETH ports** of PlusBox 301. (The network cables required for this are not included in the scope of delivery).
6. If necessary, connect a network device to the **ETH 1/0 port** that is to serve as an **Exposed Host**. If the Exposed Host function is deactivated (see Section 6.2.4), this port is switched off.

ATTENTION

The **Exposed Host network devices** of the **DMZ** (De-Militarised Zone) must always be connected to the **ETH 1/0 port** to ensure their security!

7. **Configure the network devices** via PlusBox 301 user interface. How to do this is described in Chapter 6.

NOTE

If you want to select **automatic configuration** of the Voice LAN via port **ETH 0/3**, you must connect the **configuration computer** to one of the ports **ETH 0/0 to ETH 0/2**, as only the Voice LAN can be reached via port ETH 0/3, but not the data LAN.

2.3 Light indicators (LEDs) on PlusBox 301

This section explains the behaviour of the LEDs on the front of PlusBox 301 after switching on and during operation.

Fig. 6: PlusBox 301 front view (detail)

The LEDs on the front of PlusBox 301 signal the following operating states:

Designation	Colour	Status	Meaning
Status		off	The power supply unit is not plugged in correctly, or there is a problem with power supply, or PlusBox 301 or its power supply unit is defective.
	red	on	PlusBox 301 is correctly connected to the power supply but is not (yet) ready for operation.
	green	flashes	The system restarts.
		on	The system has booted and is ready for operation (default setting). You can now enter the Modem Installation Code (MIC).
IP		off	ETH ports are not used.
	red	on	None of the ETH ports are operational.
	green	flashes	Individual ETH ports are ready for operation.
		on	All ETH ports are ready for operation.

Designation	Colour	Status	Meaning
WiFi	off or red and on		WiFi is deactivated.
	orange	flashes	Main WiFi is activated and is currently transmitting data.
		on	Main WiFi is activated and currently without data traffic.
	green	flashes	Main and Guest WiFi are activated and are currently transmitting data.
		on	Main and Guest WiFi are activated and currently without data traffic.
Aux		off	No auto-configuration is set up on PlusBox. Please contact Vodafone customer service (see Chapter 8).
	green	flashes	Alternating **3 seconds** on, 3 seconds off: Auto configuration is currently being carried out. Alternating **1 second** on, 1 second off: Auto configuration update has failed. Alternating **0.5 seconds** on, 0.5 seconds off: Communication between the Vodafone auto configuration server and the PlusBox has failed. Contact Vodafone customer service (see Chapter 8).
		on	Auto configuration was carried out successfully.
(SFP)	not used		
DSL		off	The DSL connection to the WAN is not configured.
	red	on	The DSL connection to the WAN is interrupted.
	green	flashes	The DSL connection is currently being synchronized.
		on	The DSL connection is synchronized and ready for operation.
WPS	green	flashes	The connection between WiFi network and the WiFi-enabled terminal device is established.

Tab. 1: LEDs on the front of PlusBox 301

3 PlusBox 301 user interface

This chapter describes the page structure and navigation, the page types and the most important control elements of your PlusBox 301 user interface.

3.1 Page structure and navigation

Most pages of the PlusBox user interface are structured as follows:

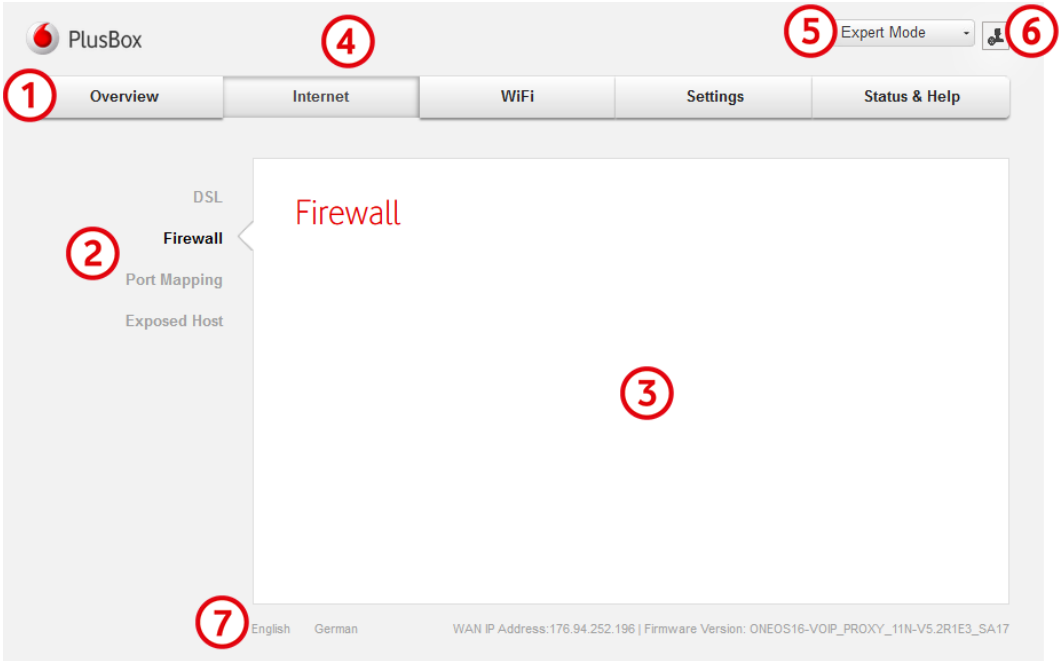


Fig. 7: PlusBox 301, Structure of pages in the user interface

No.	Control element	Action
1	**Menu bar**	Contains buttons for all **main menus**. The active main menu is displayed as a pressed button (in the example, the Internet main menu). Depending on the connection (see Tab. 6), not all or other main menus are available.
2	**Navigation bar**	Here you select the desired **submenu** of the active main menu to display it in the content window (3). The active submenu is displayed in black, those not selected in grey.
3	**Content window**	Displays the **contents** of the selected submenu, such as the **status display**, **configuration masks** and **overviews**. The arrow-shaped bulge from the white rectangular shape points to the active submenu in the navigation bar (2). The name of the submenu is displayed as a red heading in the content window.
4	**User status bar**	Displays the user's **login status** and any changes made to the basic settings

No.	Control element	Action
5	**List field for mode selection**	Here you can choose between the simplified **Basic mode** view , in which only the most important submenus are displayed, and the **Expert mode** view, which offers extensive configuration options.
6	User **button**	**Log out** from PlusBox user interface
7	**PlusBox status bar**	Displays the **WAN IP address** of PlusBox and its **firmware version**. On the left side of this status bar, you can change the user interface **display language** in real time by one click: **DE** for German and **EN** for English.

Tab. 2: PlusBox 301, Control elements of a menu page

3.2 Page types and user interface control elements

The user interface offers the following three basic types of content pages:

- **Status overview page** without or almost without any configuration options, which only serve to display the status
- **Simple configuration page** in which you can apply some basic settings
- **Complex configuration page** with extensive configuration options, often with pop-up windows for individual configuration areas.

The following subsections show examples of submenu content pages for these three page types. Depending on the functionality, these contain different control elements which are explained in the respective subsection. In addition, there are some special pages that are not included in this schema, in particular the **Overview page** (see Section 6.1).

3.2.1 Status overview page

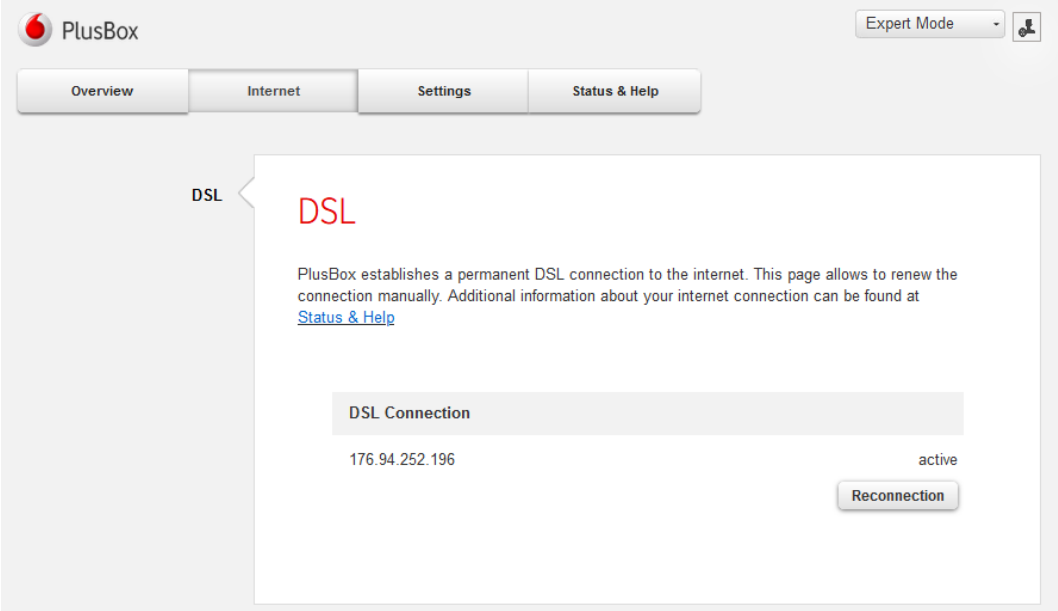


Fig. 8: PlusBox 301, Page types: Example of a status overview page

In the **DSL** submenu content page the of the **Internet** main menu, it is primarily the status of the DSL connection that is relevant, namely the WAN IP address and the **active** connection status. The only

control element on this page is the **Reconnection** button, which you can use to re-establish an interrupted DSL connection.

3.2.2 Simple configuration page

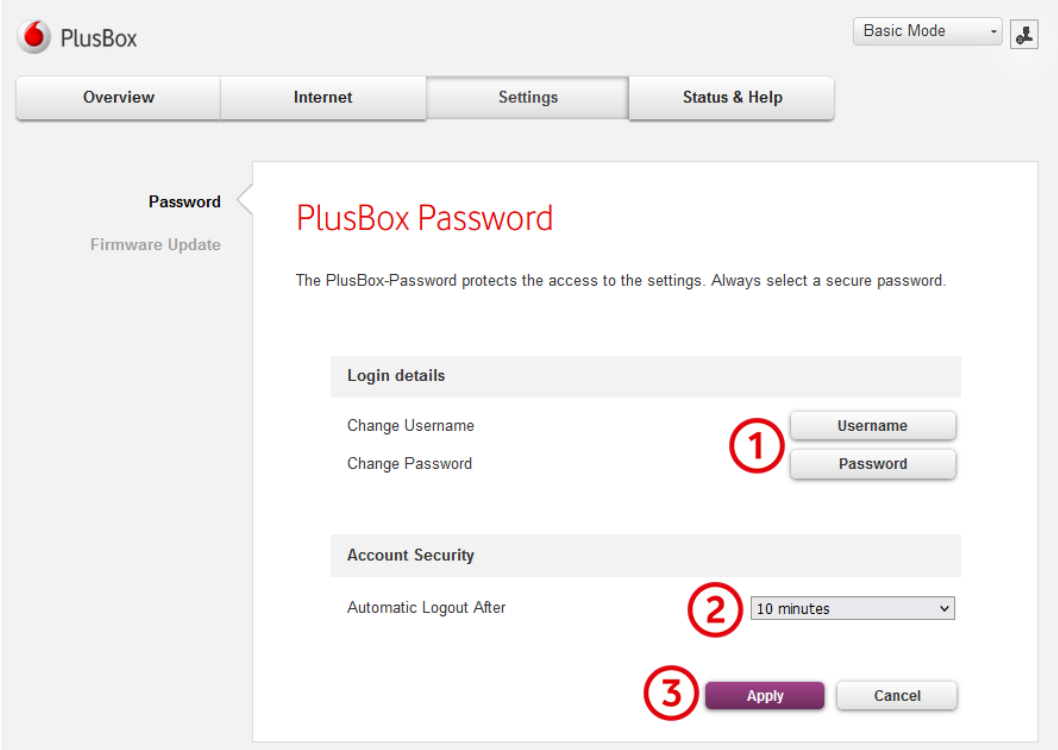


Fig. 9: PlusBox 301, Page types: Example of a simple configuration page

No.	Control element	Action on the example page
1	**Function button**	Click to open pop-up editing windows for the specified functions
2	**List field**	Expand available periods, select desired period
3	**Default buttons** Apply/Cancel	Click to accept or discard the changes you have made. The button for the **default action** is displayed with a **purple background**, the alternative action with a grey background.

Tab. 3: PlusBox 301, Control elements of a simple configuration page

3.2.3 Complex configuration page

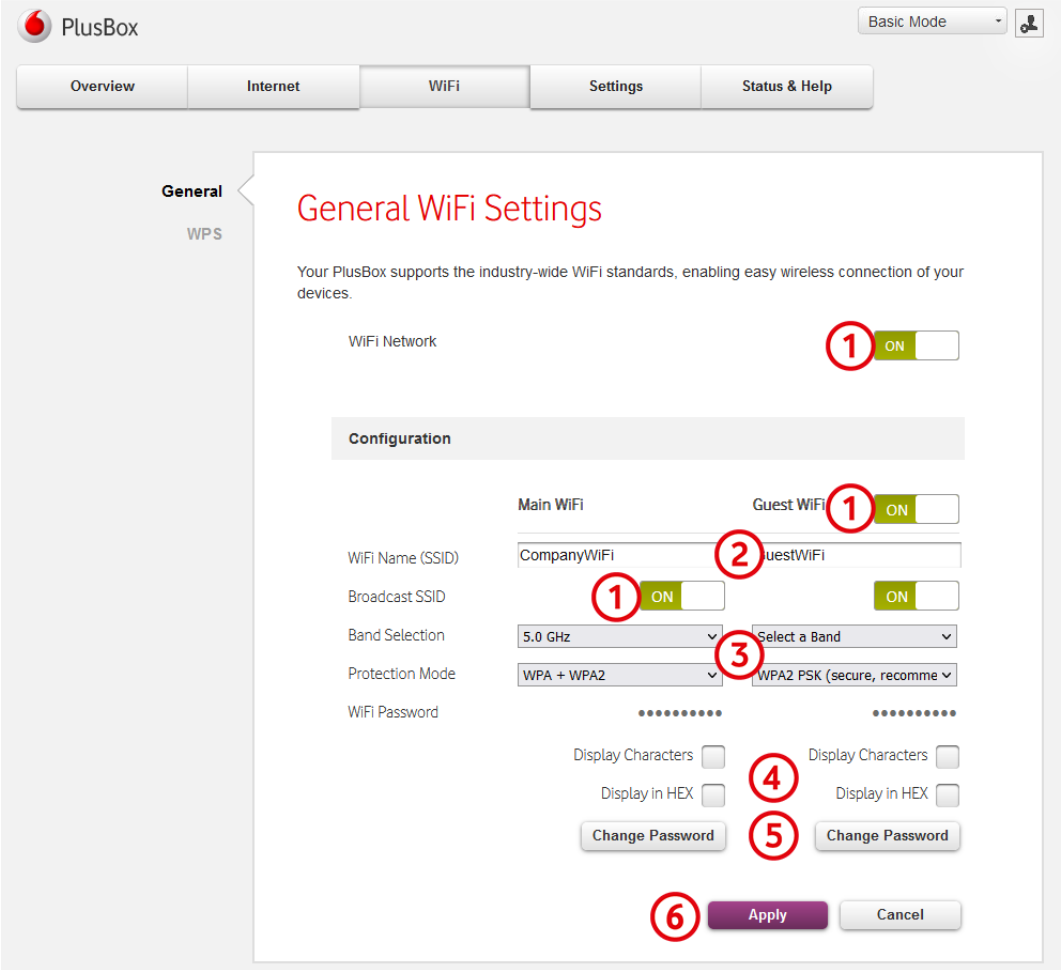


Fig. 10: PlusBox 301, Page types: Example of a complex configuration page

No.	Control element	Action on the example page
1	**Slider**	Drag to activate/deactivate the WiFi function, individual WiFis and the visibility of the WiFi name (SSID)
2	**Text field**	Enter the desired WiFi name
3	**List field**	Expand entries for band selection and security mode by clicking on the small arrow on the right, select the desired entry
4	**Checkbox**	Activate to display WiFi password in plain text
5	**Function button**	Click to change WiFi password
6	**Default buttons** Apply/Cancel	Click to accept or discard the changes you have made. The button for the **default action** is displayed with a **purple background**, the alternative action with a grey background.

Tab. 4: PlusBox 301, Control elements of a complex configuration page

Apart from complex content pages, there are also somewhat **more complex pop-up editing windows**:

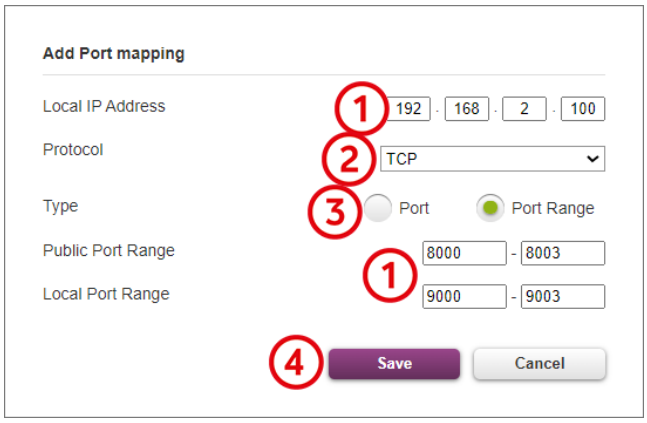


Fig. 11: PlusBox 301, Page types: Example of a complex pop-up editing window

In addition to the aforementioned types of control elements text field (1), list field (2) and default buttons (4), the above pop-up editing window contains **radio buttons (3)** with the **options** Port and Port Range, of which only one can be active at a time (in the example, this is the port range, indicated by the green dot inside the circle).

3.3 Additional user interface control elements

The buttons not yet described have the following meaning:

Symbol	Presentation (text)	Meaning
	Plus	Add entry
	Rubbish bin	Delete entry
	Gear wheels	Edit settings

Tab. 5: PlusBox 301, Additional control elements in the user interface

4 Functional overview of PlusBox 301

Functions available in PlusBox 301 vary depending on the ordered **connection type**. Tab. 6 shows you which functions you can use with your connection type and in which **menu** you will find these functions. Menus labelled **[E]** can only be called up in Expert mode. Hold down the **Ctrl** key and **click** the **section name** to directly access the description of the respective function.

Example:

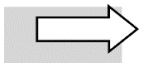
You ordered the **IP Voice + Data** connection type and want to configure the **firewall.** At the intersection of the **Firewall [E]** row and the **IP Voice + Data** column, there is a cell with the entry **6.2.2**.

Hold down the **Ctrl key** and click this information directly retrieve the corresponding section of the manual.

Functions			Connection type	
Main menu	Submenu 1	Submenu 2	**IP Voice only**	**IP Voice + Data**
Overview (symbols)	DSL		x	x
	Ethernet		x	x
	Voice LAN		--	x
	WiFi		--	x
	Guest WiFi		--	x
Internet	DSL		6.2.1	6.2.1
	Firewall [E]		--	6.2.2
	Port Mapping [E]		--	6.2.3
	Exposed Host [E]		--	6.2.4
WiFi	General		--	6.3.1
	WPS		--	6.3.2
	MAC Filter [E]		--	6.3.3
	Advanced Settings [E]		--	6.3.4
Settings	PlusBox Password		6.4.1	6.4.1
	Firmware Update		6.4.2	6.4.2
	Configuration [E]		6.4.3	6.4.3
	Network [E]		6.4.4	6.4.4
		LAN [E]	6.4.4.1	6.4.4.1
		Voice LAN [E]	--	6.4.4.2
		WiFi [E]	--	6.4.4.3
		Guest WiFi [E]	--	6.4.4.3
	PlusBox Reset & Reboot [E]		6.4.5	6.4.5
Status & Help	PlusBox Status		6.5.1	6.5.1
	Diagnostic program [E]		6.5.3	6.5.3
	About		6.5.4	6.5.4

Tab. 6 : PlusBox 301 functions

NOTE



The **Overview** page contains only icons that you can click to access the respective content pages. Therefore, only **crosses** are placed here if the corresponding **menu** with its functions **can be invoked**.

If you click symbols for which there are no accessible menus in the selected interface (indicated by **--** in the table), you will receive an **error message**.

5 Setting up PlusBox 301 for Voice service

Carry out the configuration on your PlusBox 301 as described below. First configure the computer with which you access PlusBox 301 configuration interface. Then set up PlusBox 301 for the Voice service via this configuration interface.

5.1 Setting up the configuration computer

The computer you wish to use to configure PlusBox 301 must obtain its IP address dynamically via DHCP (Dynamic Host Configuration Protocol).

Ensure as follows that the computer is set up accordingly (default setting):

1. Connect one of the **ports ETH 0/0 to ETH 0/2** of PlusBox 301 to a LAN interface of your configuration computer via the yellow LAN cable.

ATTENTION

In **IP Voice + Data** connection, you **cannot use ETH 0/3 port** if you have selected the **automatic configuration of the Voice LAN** via this port (not the VLAN variant), see Section 6.4.4.2.

In this case, the **Voice LAN** is located in a **different network segment** than the LAN for data traffic and you would not be able to access its user interface.

2. Configure your computer with the following TCP/IP properties:

Parameters	Selection
IPv4 address	Obtain an IP address automatically
DNS server address	Obtain DNS server address automatically

Tab. 7: Network settings for configuration computer

To do this, proceed as follows (description for Windows 10, other Windows operating systems similar):

3. Right-click the Windows start icon and select the **Settings** entry.

The **Settings** window opens.

4. Select Network and Internet.

The **Status – Network status** window opens.

5. In the Advanced network settings area, click the Change adapter options entry.

The **Network connections** window opens.

6. **Right-click** the icon with the name of the Internet connection to be configured to call up context menus.
7. Select the **Properties** context menu.

The **[Connection name] properties** window opens.

8. Select the entry Internet Protocol Version 4 (TCP/IPv4).
9. Click the **Properties** button.

The Internet **Protocol Version 4 (TCP/IPv4) Properties** window opens.

10. Activate the options **Obtain IP address automatically** and **Obtain DNS server address automatically**.
11. Confirm the entries by clicking **OK**.

You have now applied all necessary network settings.

5.2 Activating and setting up PlusBox 301

This section describes how to activate PlusBox 301 with the Modem Installation Code (MIC) and to apply the necessary basic settings.

NOTES

If PlusBox 301 does not behave as described below during configuration and you receive an error message instead, see Chapter 7 to find out how to rectify the error.

The **configuration** via the user interface **described below** is **only** possible if you use a **cable during setup** (and also for subsequent changes). Connect PlusBox 301 to the configuration computer via a network cable as described in Section 5.1.

1. Open your Internet browser and enter the following address: **http://192.168.2.1** or alternatively **plus.box**.

The start page opens.

2. Enter your **Username** and the **Password** which you will find on the underside of PlusBox 301:

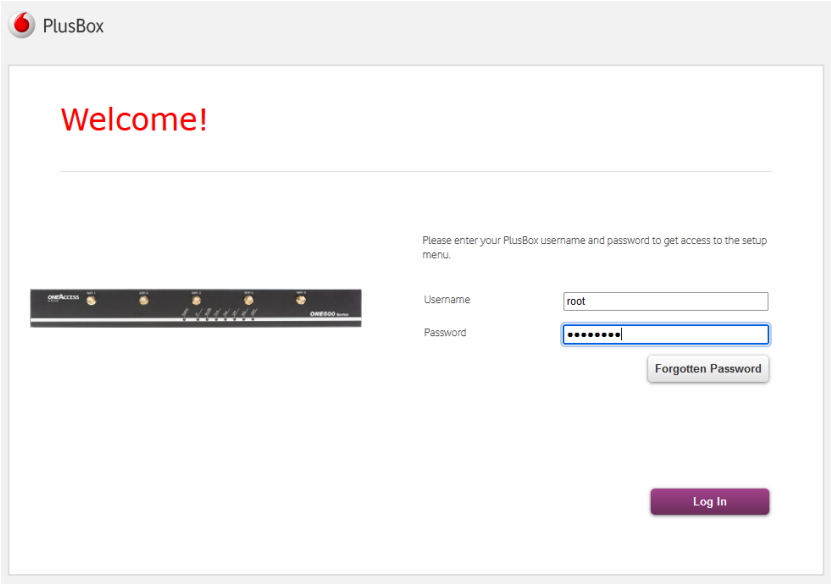


Fig. 12: PlusBox 301, Enter username and password

3. Click **Log In**.

The **Activation wizard** starts:

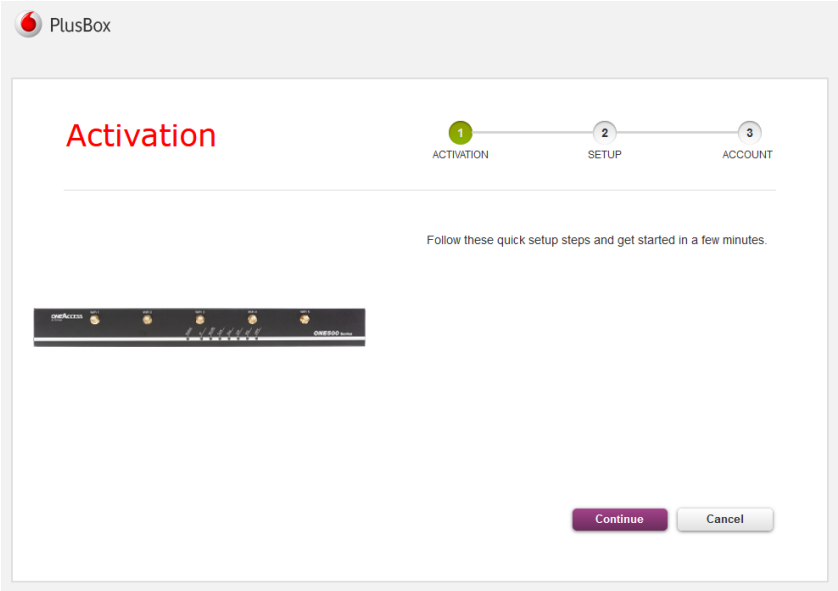


Fig. 13: PlusBox 301, Activation wizard, Step 1: Activation

You are prompted to connect PlusBox 301 to the TAE socket. socket. If you have not already done so, connect PlusBox 301 to the telephone socket using the purple DSL cable.

4. Click **Continue**.

The DSL line gets checked. The input screen for the Modem Installation Code (MIC) opens:

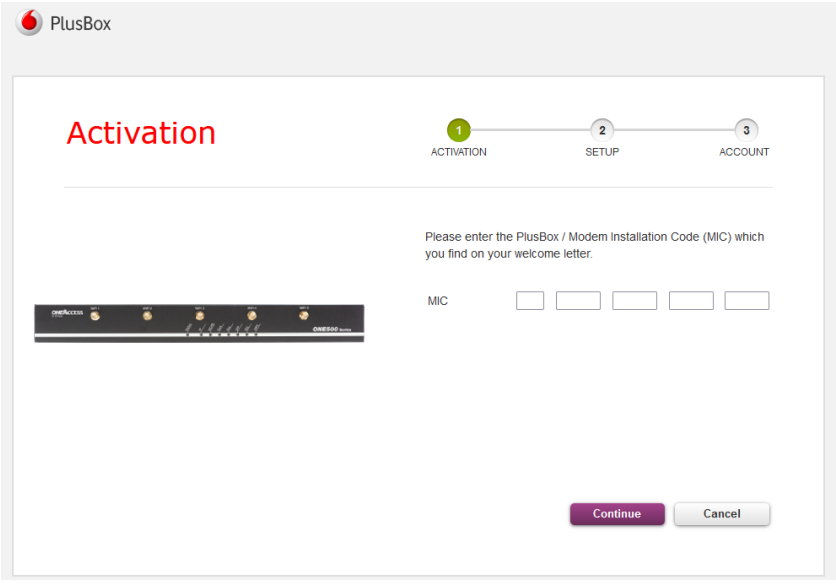


Fig. 14: PlusBox 301, Activation wizard, MIC input

5. Enter the 22-digit **Modem Installation Code** (MIC) from your welcome letter and click **Continue**.

The MIC gets checked, and then activation is carried out. After successful activation, you receive a corresponding message:

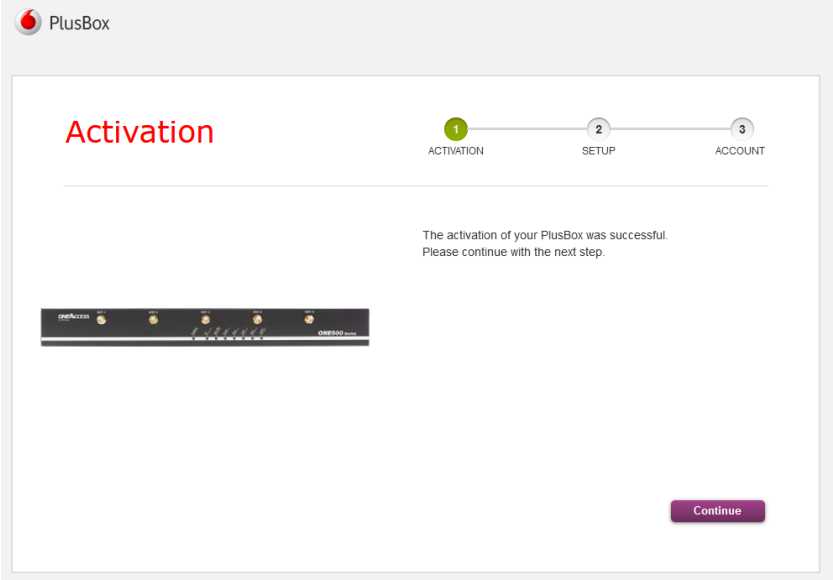


Fig. 15: PlusBox 301, Activation successful

6. Click **Continue**.

The Setup page opens. Here you can restore a configuration saved on your computer (not possible during initial setup):

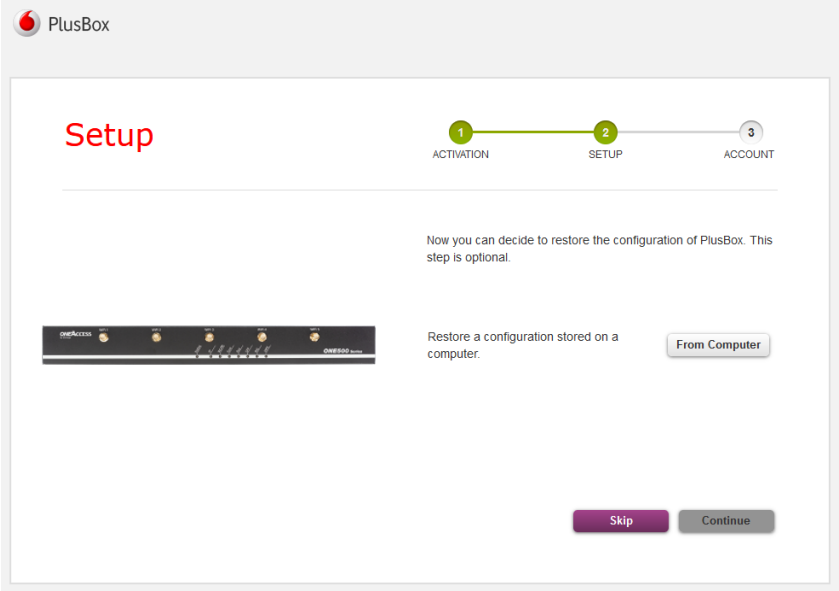


Fig. 16: PlusBox 301, Activation wizard, Step 2: Setup

7. Click **Skip**.

NOTE

WiFi setup described below is possible only for the **IP Voice + Data** connection type.

If you ordered the **Voice only** variant, continue with **step 12.**

You can now define the basic settings for your **WiFi network:**

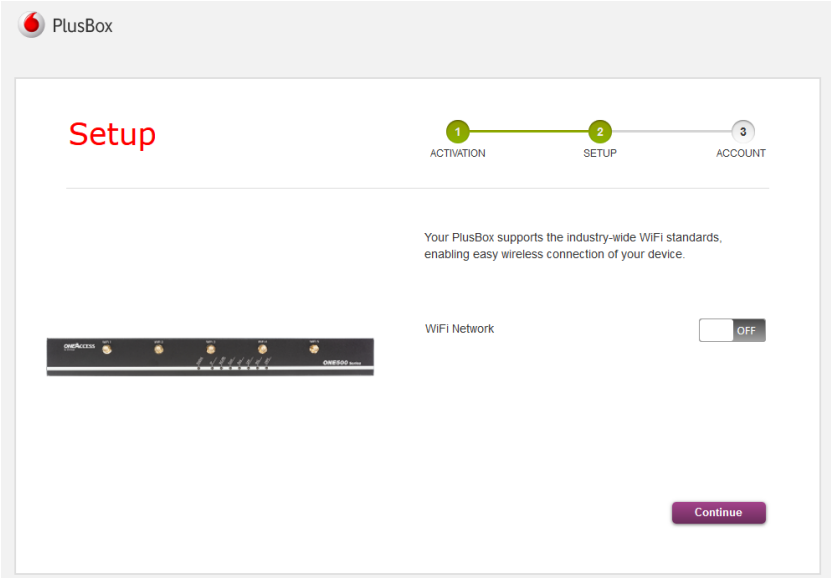


Fig. 17: PlusBox 301, Activation wizard, Setting up the WiFi network

8. To do this, move the slider to the right to switch on the network.

The input mask for **WiFi settings** opens:

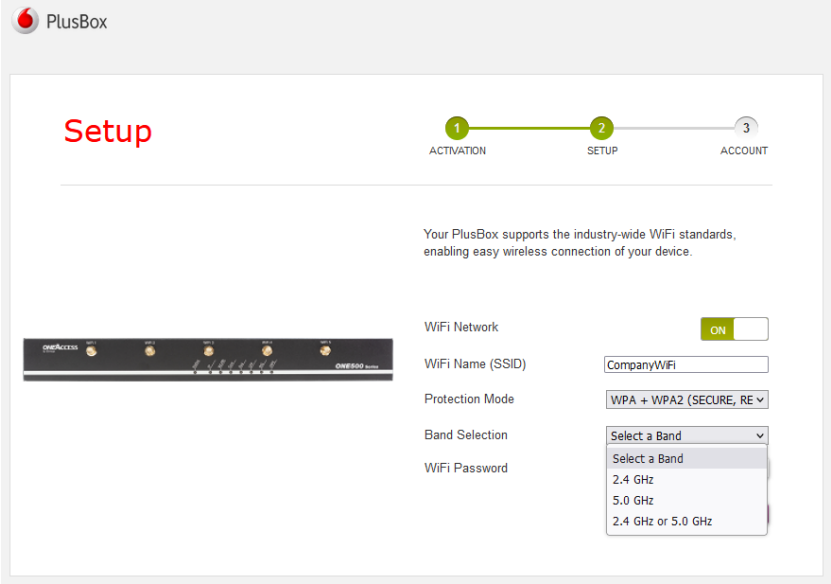


Fig. 18: PlusBox 301, Activation wizard, Defining WiFi settings

9. Make the following entries:
   - desired **WiFi Name**
   - **Protection Mode** (recommended: **WPA2 PSK**)
   - **Band Selection**: 2.4 GHz, 5 GHz or automatic selection between these bands
   - **WiFi Password:** Click **Change Password**

When entering the password in the pop-up editing window, according to the criteria displayed in the message, you are continuously shown how secure the selected password is – from red (Weak) to yellow to green (Strong):

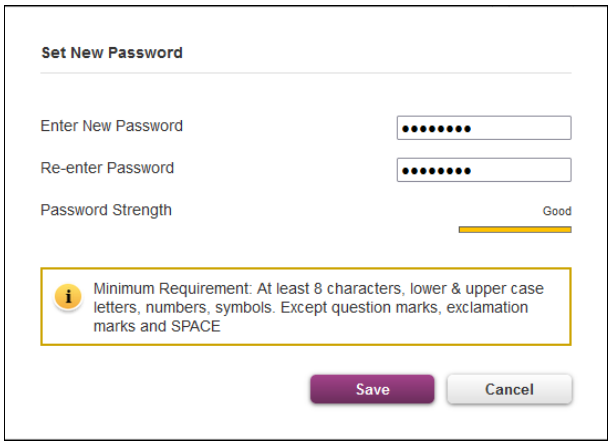


Fig. 19: PlusBox 301, Activation wizard, Changing password for WiFi network

10. Click **Save** to close the pop-up window.

You receive a confirmation message on successful saving in a separate pop-up window.

11. Click **Continue** in the wizard.

The **Account** page opens:

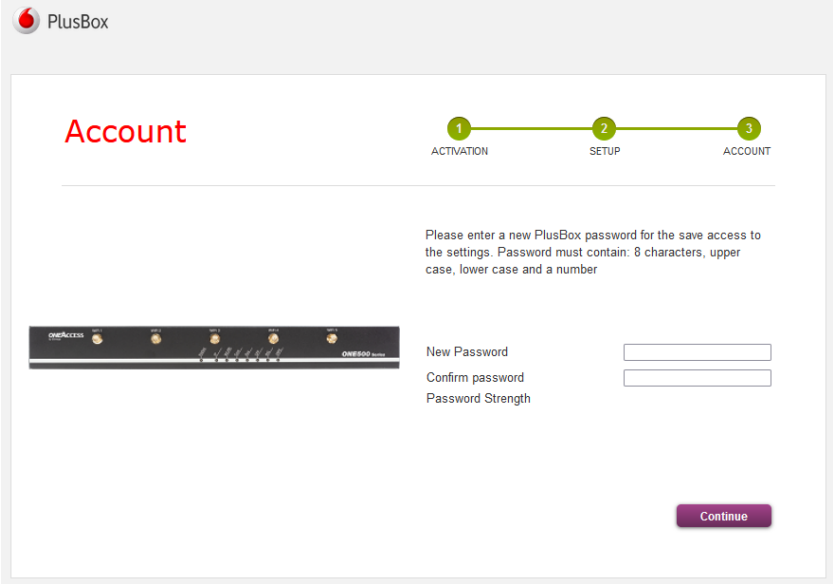


Fig. 20: PlusBox 301, Activation wizard, Step 3: Account

12. Enter the desired **PlusBox password** in the **New Password** field, **Confirm password** and click **Continue**.

This completes the basic configuration. You receive the following message:

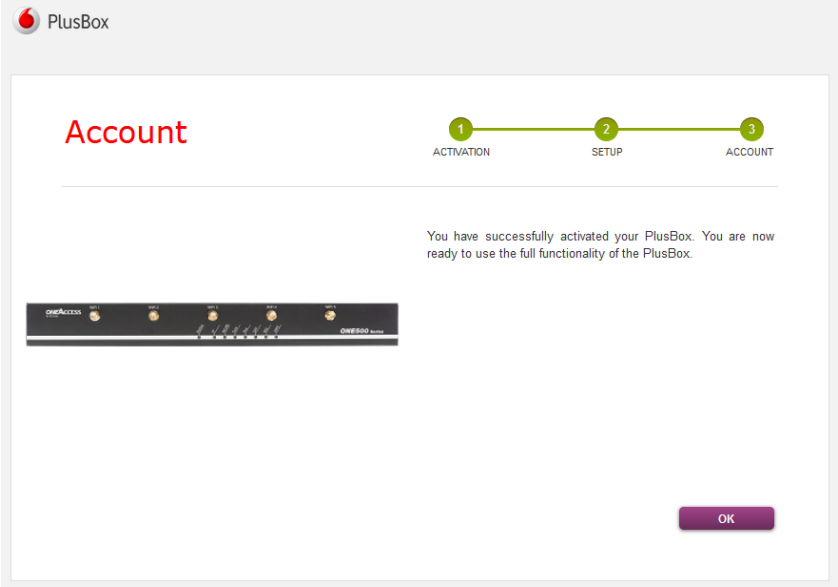


Fig. 21: PlusBox 301, Activation wizard, Account set-up completed

PlusBox 301 is now prepared for Voice service operation with Anlagen-Anschluss Plus as well as for Internet access. You can check this on the status page of PlusBox 301, see Section 6.5.1.

In Chapter 6, you find how to apply further settings to your (Ethernet or WiFi) network.

6 Configuring PlusBox 301 for Internet access

This chapter describes the configuration options on the individual content pages. For each of the submenus, the heading indicates in which modes (Basic/Expert mode) it is available.

NOTE

Depending on the ordered connection type, different main and sub menus are displayed. The range of device icons displayed and their status on the Overview page also depend on the connection type.

6.1 Overview

The overview page is an individual page type that is available for both Basic and Expert mode. As only the main menu exists here without any submenus, the navigation bar is omitted:

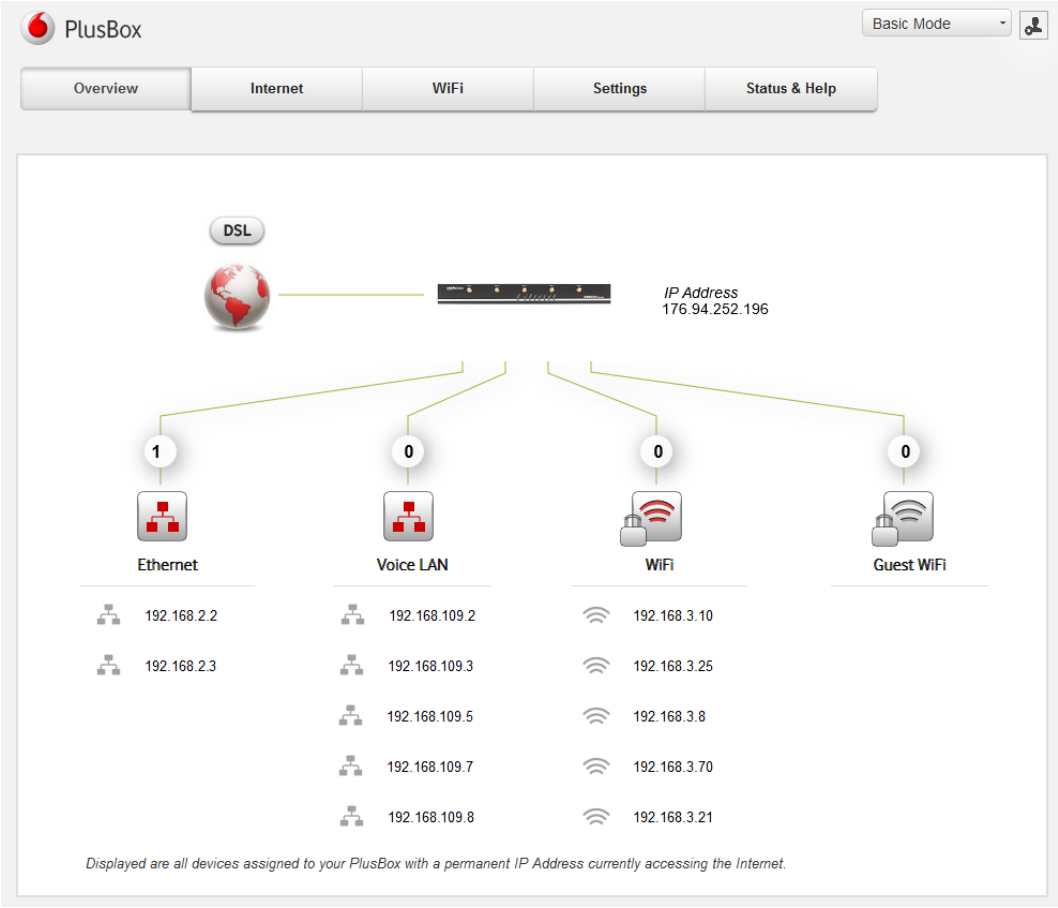


Fig. 22: PlusBox 301, Overview page (example for IP Voice + Data connection)

On the Overview page, you immediately recognize **WAN, LAN and WiFi status** of your PlusBox 301 (the latter if available for your chosen connection type). The **IP address** and **network type,** as well as

the **number of connected network devices** per type are displayed. If available, you can use the green arrow at the bottom to expand the list for additional devices that are not initially displayed.

If a WiFi network is **deactivated,** this is indicated by the **icon** being **greyed out.** WiFi networks with configured **encryption** contain a **lock** next to the WiFi symbol.

Click any network type icon to get more information about the status of that network. Both the icons and the network type names are linked to the corresponding status pages.

To query the **DSL status**, click the **globe** or the designation **DSL** above it. For **PlusBox 301 status** in general, click the **PlusBox image**.

If there is a **problem with the DSL connection,** this is indicated by a small **warning triangle symbol** next to the label **DSL**.

6.2 Internet

This section describes the functions of the **Internet** main menu. The **DSL** submenu is available for **all connection types** (see Tab. 6). The **Firewall, Port Mapping** and **Exposed Host** submenus are **only available** for **IP Voice + Data** connections, as no potentially harmful data traffic for internal networks can occur in the voice-only variant.

NOTE

The following subsections primarily describe the operation of the submenus. For background information on the **Firewall**, **Port Mapping** and **Exposed Host** submenus and for explanatory **configuration scenarios,** see Chapter 9.

6.2.1 DSL (Basic and Expert)

The **DSL** content page, which is available in both Basic and Expert mode, shows the **IP address** and the **active** or **inactive status** of the DSL connection:

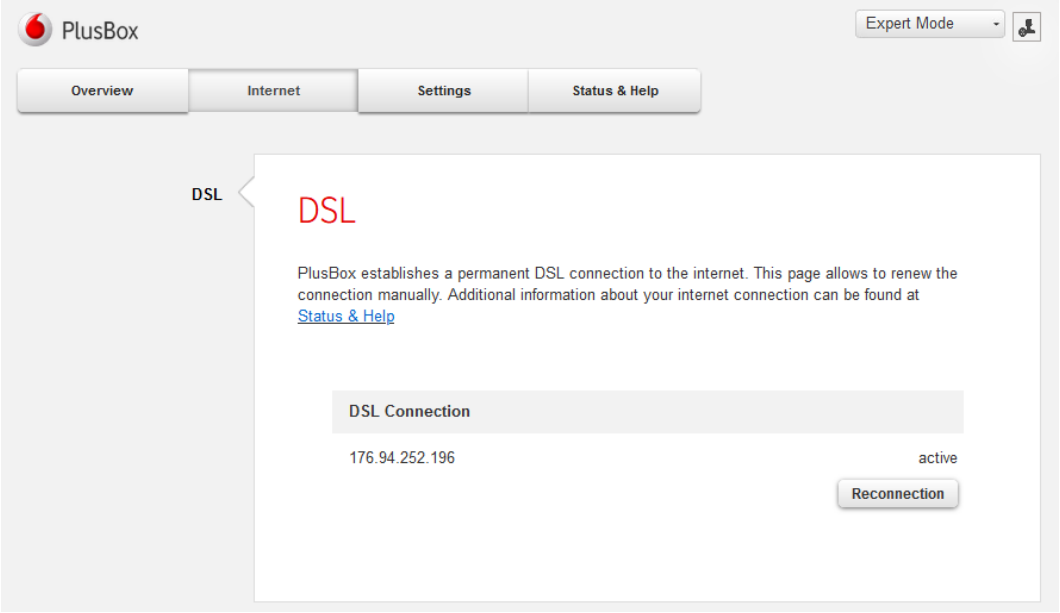


Fig. 23: PlusBox 301, DSL content page

If the DSL connection is interrupted, use the **Reconnection** button to re-establish the connection.

6.2.2 Firewall (Expert)

The **Firewall** content page is available for **IP Voice + Data** connections only, and only in Expert mode.

Devices connected to the **LAN ports ETH 0/0 to 0/3** of PlusBox 301 are **not accessible from the Internet in the default setting** and are protected by the integrated firewall. Similar rules also apply to devices located in the WiFi, Guest WiFi or Voice LAN.

The integrated firewall works as a **stateful firewall** so that you no longer need to additionally configure the return path for allowed network traffic from the LAN, Voice LAN and WiFi zones to the WAN (Internet), as this is automatically enabled.

The **firewall** integrated in the PlusBox **cannot be deactivated**. In the **Firewall** content page (only available in Expert mode), you can, however, explicitly define which services and connections between which zones are allowed and which are denied, configuring **Firewall Rules**:

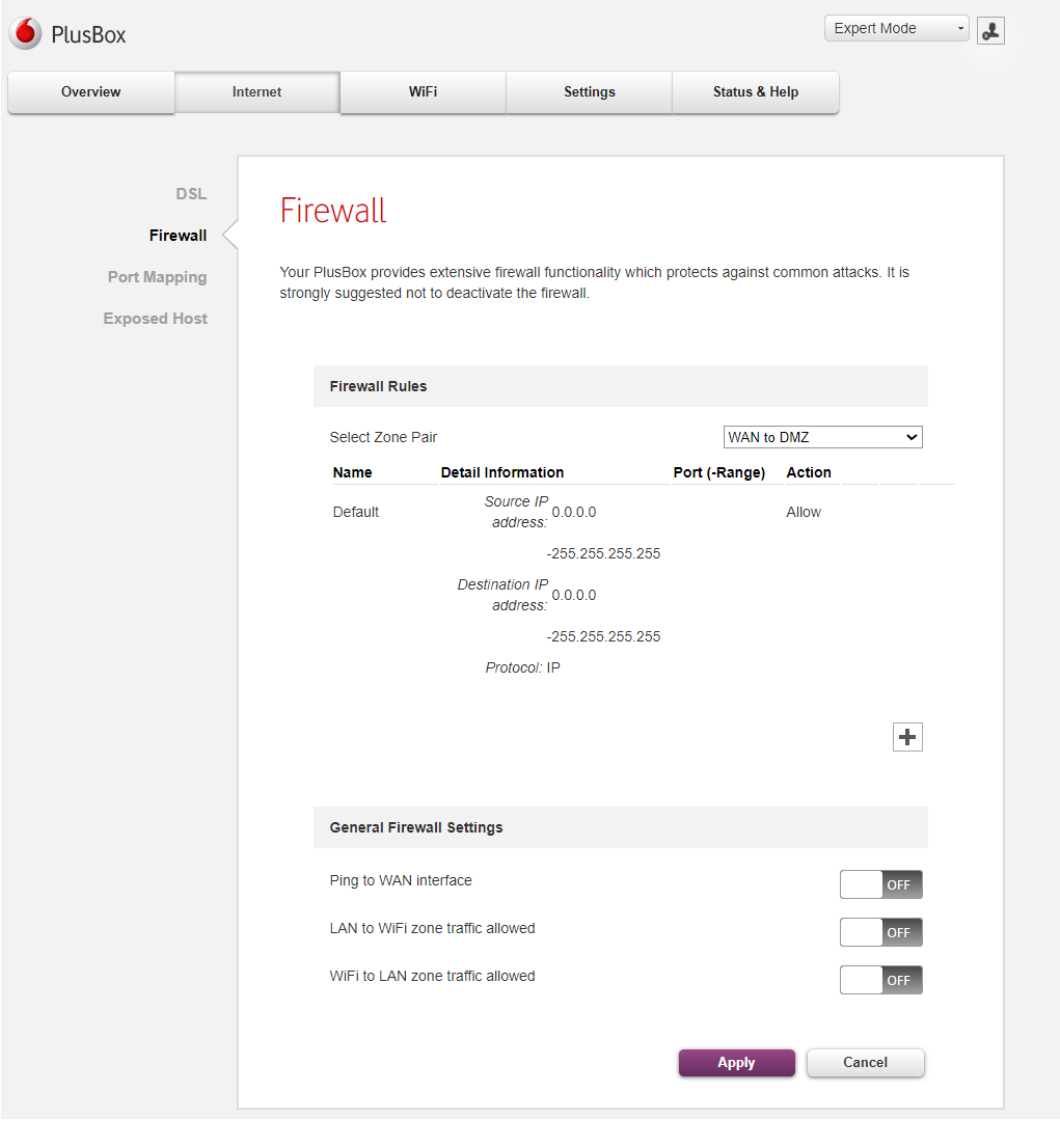


Fig. 24: PlusBox 301, Firewall content page

In this content page, you can define up to 10 individual **firewall rules**.

NOTES

This does not include **implicit** ports created by Port Mapping (see Section 6.2.3) for data traffic from the WAN (Internet) to one of the local zones. In the **Firewall** content page, these rules' designations start with **Default PM**, and they are numbered consecutively. The link to the respective implicit rule takes you to the **Port Mapping** overview page.

The designation of your customized firewall rule may contain up to 16 of the following characters: **a-z**, **A-Z**, **0-9** and **-_** (hyphen, underscore). Umlauts, ß and spaces are not permitted.

Use the **sliders** at the bottom of the page to define whether and in which direction **data traffic between LAN and WiFi** is allowed via all ports. For security reasons, you can also activate or deactivate the option to check **WAN port accessibility** using a **Ping** (ICMP).

Proceed as follows to **create** new **Firewall Rules** or to **edit** existing ones:

1. From the **Select Zone Pair** list field, select the zones between which data traffic is to be permitted or rejected according to your security concept. The following zones are available in different direction pairs:
   - WAN
   - LAN
   - Voice LAN (only for IP Voice + Data connection)
   - WiFi (only for IP Voice + Data connections)
   - Guest WiFi (only for IP Voice + Data connections)
   - DMZ (Demilitarized Zone) – this zone serves as a kind of buffer between the computers in the internal network that want to access certain services on the Internet and the potentially insecure WAN, from which malware should not enter the LAN or WiFi
2. Click the + (plus) button to add a new firewall rule for the selected zone pair or the (gear wheels) button to edit an existing rule.

A pop-up window for editing the **Firewall Rule**s opens:

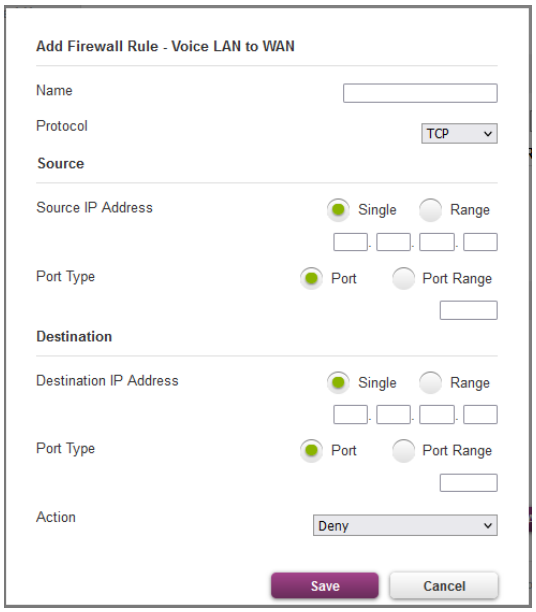


Fig. 25 : PlusBox 301, Pop-up editing window for firewall rules

3. Enter a meaningful **Name** for the rule to be created in the text field of the same name.
4. For data traffic between the zones, select a **Protocol** from the list field:

- IP
- ICMP
- TCP
- UDP
- SCTP

5. Use the **Source IP Address** radio buttons to select whether you want to specify a **Single** address or an address **Range** for the computer in the source zone.
6. In the text fields, enter the IP address or the IP address range of the computer in the source zone.
7. Use the **Port Type** radio buttons to selectradio buttons to select whether you want to specify a single **Port** for data traffic or a **Port Range** for the computer in the source zone.
8. Enter the desired port or port range of the computer from the source zone in the text fields of the same name.
9. For the **Destination IP Address** and the destination **Port Type**, proceed in the same way as described in steps 5 to 8**.**
10. In the **Action** list box, select whether you want to **Allow**, **Reject** or **Deny** the currently defined action.
11. Save the rule using the **Save** button.

The editing window is closed.

12. In the **General Firewall Settings** area, use the sliders to **activate** or **deactivate** the following settings:
    - **Ping to WAN interface**
    - **LAN to WiFi zone traffic allowed** (**IP Voice + Data** only)
    - **WiFi to LAN zone traffic allowed** (**IP Voice + Data** only)
13. By clicking the **Apply** button, confirm the firewall configuration for PlusBox 301.

6.2.3 Port Mapping (Expert)

The **Port Mapping** content page is available for **IP Voice + Data** connections only, and only in Expert mode.

Use the Port Mapping function to protect the computers in your LAN, Voice LAN or WiFi to which connection requests from the Internet are to be forwarded directly. To do this, you assign to a **Public Port (Range)** of your server a (different) **Local Port (Range)** for receiving connection requests.

Example:

You want to configure your web server with the **public TCP port range 8000 to 8003**: Open the **local port 8000** for its LAN IP address 192.168.2.100.

The firewall thus automatically opens for the application defined by the port number for this zone pair in the selected communication direction.

If you define Port Mappings, these are treated as **implicit firewall rules** for data traffic from the WAN (Internet) to one of the local zones. They are transferred to the **Firewall** content page (see Section 6.2.2), with a **Default PM** in the beginning of their designation, and are numbered consecutively.

ATTENTION

Please note that such **specifically defined Port Mapping rules** have a **higher priority than the firewall's default setting** and therefore **overwrite Default** firewall rules!

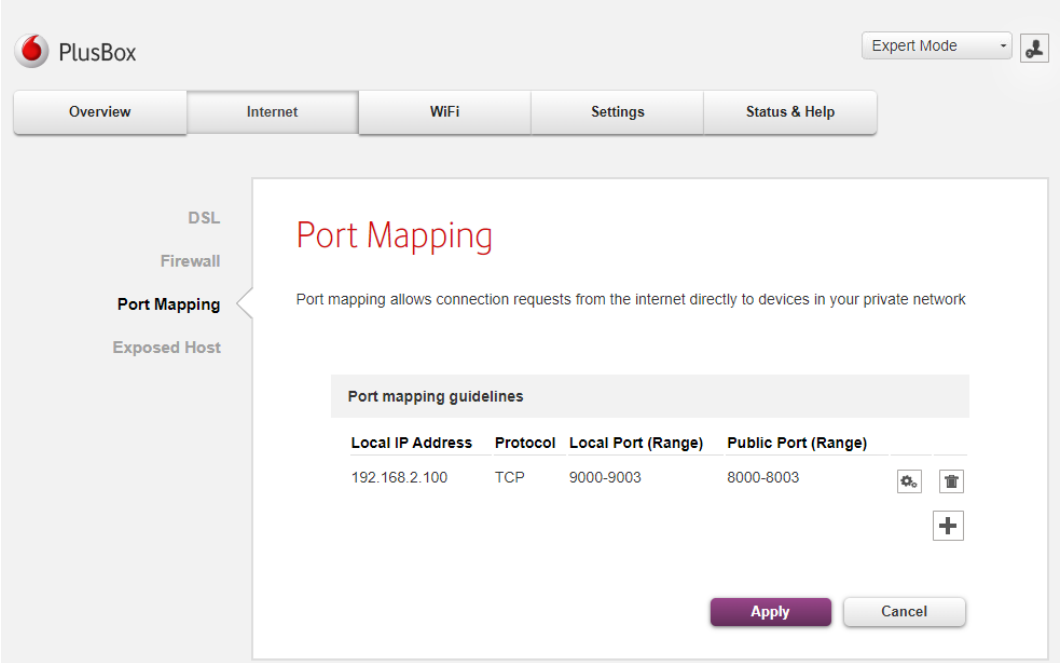


Fig. 26: PlusBox 301, Port Mapping content page

In the example shown here, the Port Mapping is configured for a server in the LAN, specified by its **Local IP Address**. Its **Local Port Range** 9000-9003 is mapped to a **Public Port Range** 8000-8003, used for HTTP servers on the Internet.

Proceed as follows if you want to **add** a new **Port Mapping** or if you want to **add** an existing one:

1. Click the + (plus) button to add a new port mapping or on (gear wheels) to change an existing one.

A separate Change port mapping or Add port mapping window opens.

2. Enter the **local IP address** of the computer in your LAN or WiFi for which the port mapping is to be configured in the text field of the same name.
3. Select a **protocol** for data traffic between the Internet and the local computer from the list box:
   - TCP
   - UDP
4. Use the **Type** radio button to select whether you want to use a single **Port** or a **Port Range** for allowed data traffic from the Internet to the local network.
5. Enter the **Public Port** or **Public Port Range** of the local computer in the text field of the same name.
6. Enter the **Local Port** or **Local Port Range** of the local computer in the text field of the same name.

7. **Save** the Port Mapping:

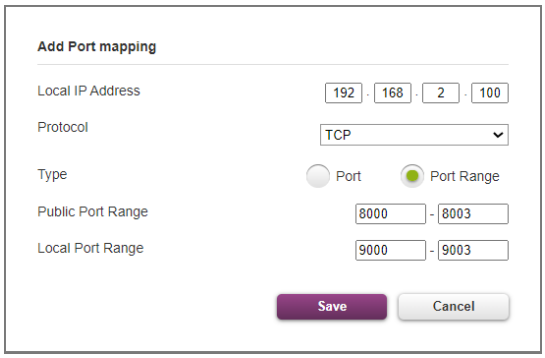


Fig. 27: PlusBox 301, Pop-up editing window for Port Mapping

The pop-up editing window closes.

8. Click the **Save** button to transfer the Port Mapping configuration to the PlusBox.

6.2.4 Exposed Host (Expert)

The **Exposed Host** content page is available for **IP Voice + Data** connections only, and only in Expert mode.

This function allows you to make a computer accessible that, according to the firewall rules (see Section 6.2.2), is not accessible. This computer is located in the **DMZ** (**De**militarized **Z**one), which is referred to as such because it is freely accessible, unlike the other protected zones, e.g. LAN and WiFi.

By activating the Exposed Host function in the PlusBox user interface, the previously blocked PlusBox port **ETH 1/0** is released, and a DMZ is set up.

In the **default setting before activating** the Exposed Host function, **outbound data traffic from computers in the DMZ** is **denied**, not even to the WAN (Internet). To allow specified data flows from the DMZ to other zones, you must define corresponding firewall rules (see Section 6.2.2).

After activating the Exposed Host function, data traffic from the Internet (WAN) is routed to the computer in the DMZ defined in the **Exposed Host IP address** field (see Fig. 28) – unless a differing Port Mapping is defined for specific data flows (see Section 6.2.3), which would divert this type of traffic to another zone or another computer.

There are two different configuration options for a server in the DMZ that is to be accessed from a computer located outside the local networks:

- DMZ server as an **Exposed Host**: The IP address defined for the Exposed Host (see Fig. 28) is the IP address of the server that shall actually be accessed. This server can be accessed from the local networks/zones and the WAN (Internet) via all ports for all types of network traffic.
- DMZ server (**not exposed**): This server has an IP address that differs from the **Exposed Host IP address** (see Fig. 28). For the non-exposed DMZ server, you define Port Mapping rules (see Section 6.2.3) that open only those ports that are actually required for accessing the respective service, e.g. port 80 for HTTP. In this case, as the Exposed Host IP address, you enter any address other than the actual IP address of the Exposed Host – if required, even an IP address that is not used by any of the DMZ devices. The advantage of this variant is that all ports that are not required are closed and therefore the non-exposed DMZ server cannot be reached via these ports by malware that an attacker would use to take over the server.

Further information on the default configuration of the DMZ after activating the Exposed Host function can be found in Section 9.4 and some use cases in Sections 9.5 to 9.7 of this manual.

Proceed as follows to set up an Exposed Host:

1. Via the slider, activate the **Exposed Host Function** which is deactivated by default.

The Exposed Host content page displays additional text fields for entering the **IP addresses** of the **Exposed Host** and **PlusBox 301** as well as the **subnet mask**:

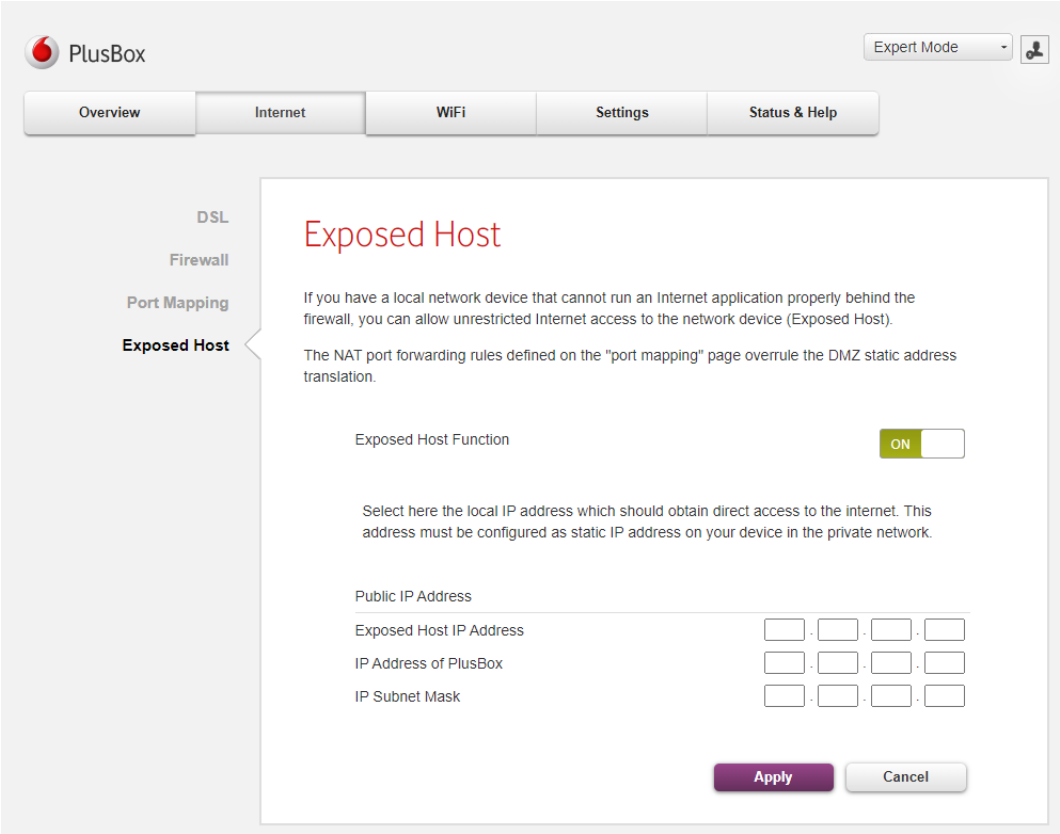


Fig. 28: PlusBox 301, Exposed Host content page

2. In the text fields of the same name, enter the **Exposed Host IP address**, the **IP Address of PlusBox** and the **IP Subnet Mask**.
3. Confirm the Exposed Host configuration of the PlusBox by clicking the **Apply** button.

6.3 WiFi

This section describes the functions of the **WiFi** main menu. Two Wireless LANs are available: the **Main WiFi** and a **Guest WiFi** which you can activate if required.

NOTE

For security reasons, you cannot access the PlusBox 301 user interface via WiFi, but only via an Ethernet connection your LAN.

6.3.1 General WiFi Settings (Basic and Expert)

The **General WiFi Settings** content page is available in both Basic and Expert mode:

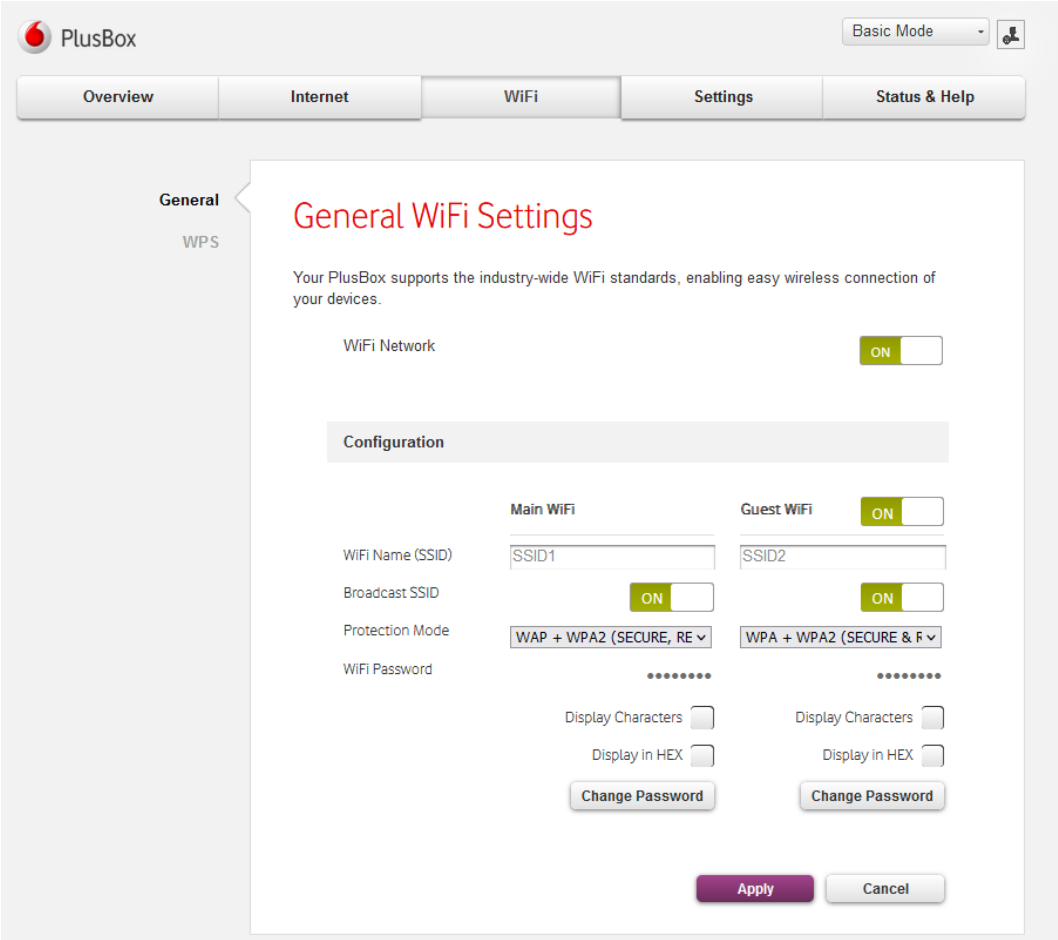


Fig. 29: PlusBox 301, General WiFi Settings content page

Proceed as follows to configure your **Main** and/or **Guest WiFi:**

1. **Activate** the desired WiFi using the slider.
2. Enter the desired **WiFi** Name (SSID in the text field of the same name.
3. **Activate** or **deactivate** the **Broadcast SSID** option using the slider, depending on whether the assigned name should be displayed to outsiders or not.
4. From the **Protection Mode** list field list box, click the arrow button to select an encryption type for your WiFi.

CAUTION

The **encryption type recommended** by Vodafone is **WPA2 PSK**. If you select an encryption type that is not recommended or no encryption at all, you will receive a warning message below the input mask. Some specific insecure encryption types are not supported by PlusBox 301, which is also displayed.

5. If required, check the **Display Characters** (normal ASCII display) or **Display in HEX** (display in hexadecimal notation) checkbox to display the selected **WiFi Password** in plain text.

6. If required, click the **Change Password** button.

The **Set New Password** popup editing window opens.

7. **Enter** a **New Password** according to the criteria displayed in the editing window message and **Re-enter** it in the second text field.

As you enter the password, you are continuously shown how secure the selected password is – from red (weak) to yellow to green (strong):

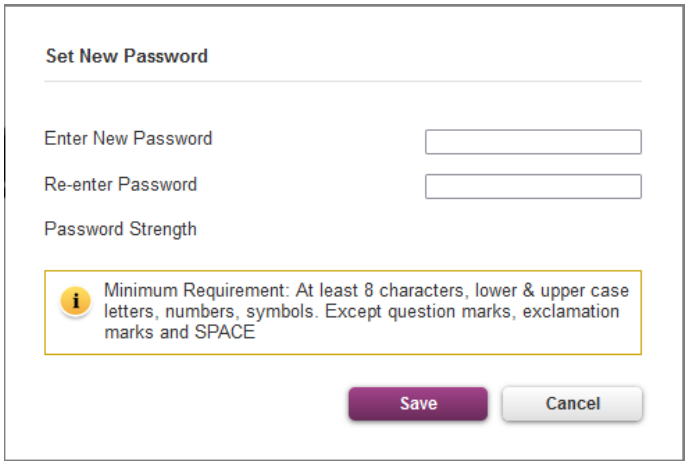


Fig. 30: PlusBox 301, Setting new password for WiFi network

8. Click **Save** to close the pop-up window.

In a separate pop-up window, you receive a message that your new password has successfully been saved.

9. Click the **Save** button in the content window to transfer the configuration to the PlusBox.

6.3.2 WPS (Basic and Expert)

NOTES

For the WPS functionality, an **active WiFi network** is **required**.

Not all terminal devices support Wi-Fi setup via **WPS**. Check the manufacturer's documentation for your terminal device to see whether WPS support is available.

To simplify WiFi network setup, PlusBox 301 can be set up to either use **WiFi Protected Setup** (WPS) for **automatically detecting new WiFi devices** or to **generate** a **PIN** by which a new WiFi device must initially log on to the PlusBox.

Both functions are available on the **WPS** content page, which can be accessed in both Basic and Expert mode.

Proceed as follows to **automatically connect PlusBox 301 and a new WiFi device** using the **WPS-Push** procedure:

1. **Activate** the **WPS Function** and **WPS-Push** method using the respective sliders.
2. Select the desired WiFi from the **WPS is applied to** list field by clicking on the arrow button: **Main WiFi** or **Guest WiFi**.
3. Click the **Connect** button in the **Push Button on Device** window area.
4. Click the **Apply** button at the bottom of the window.

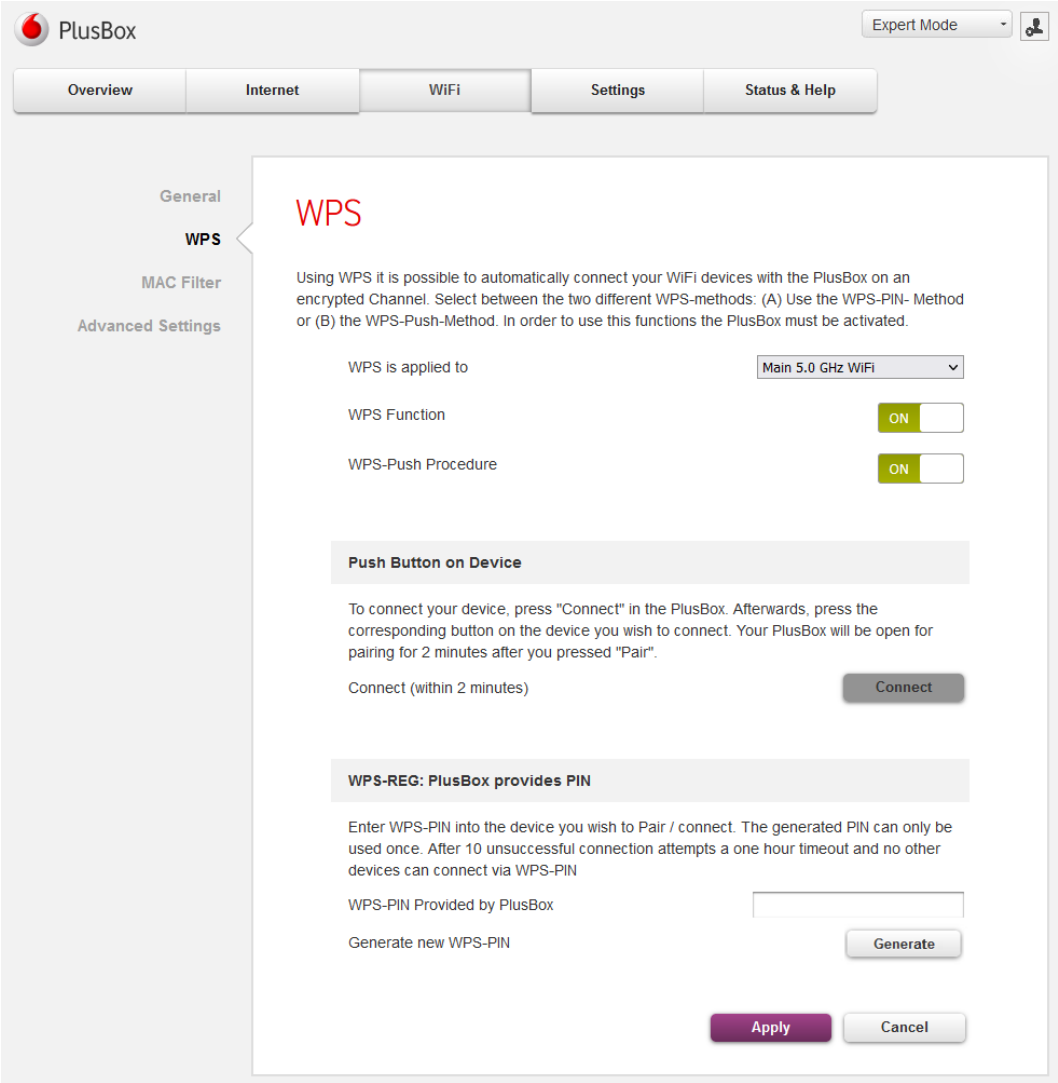


Fig. 31: PlusBox 301, WPS content page, Automatically connecting WiFi device via WPS Push

5. Then immediately activate the search for a WiFi hotspot on your WiFi-enabled terminal device.

The two devices connect via WiFi.

Proceed as follows to **connect PlusBox 301 and the new WiFi device** using the **WPS-REG** method:

1. **Activate** the **WPS Function** using the slider.
2. If required, **Generate** a **new WPS-PIN** using the **Generate** button or write down the non-editable **WPS-PIN Provided by PlusBox**.
3. Click the **Apply** button at the bottom of the page.

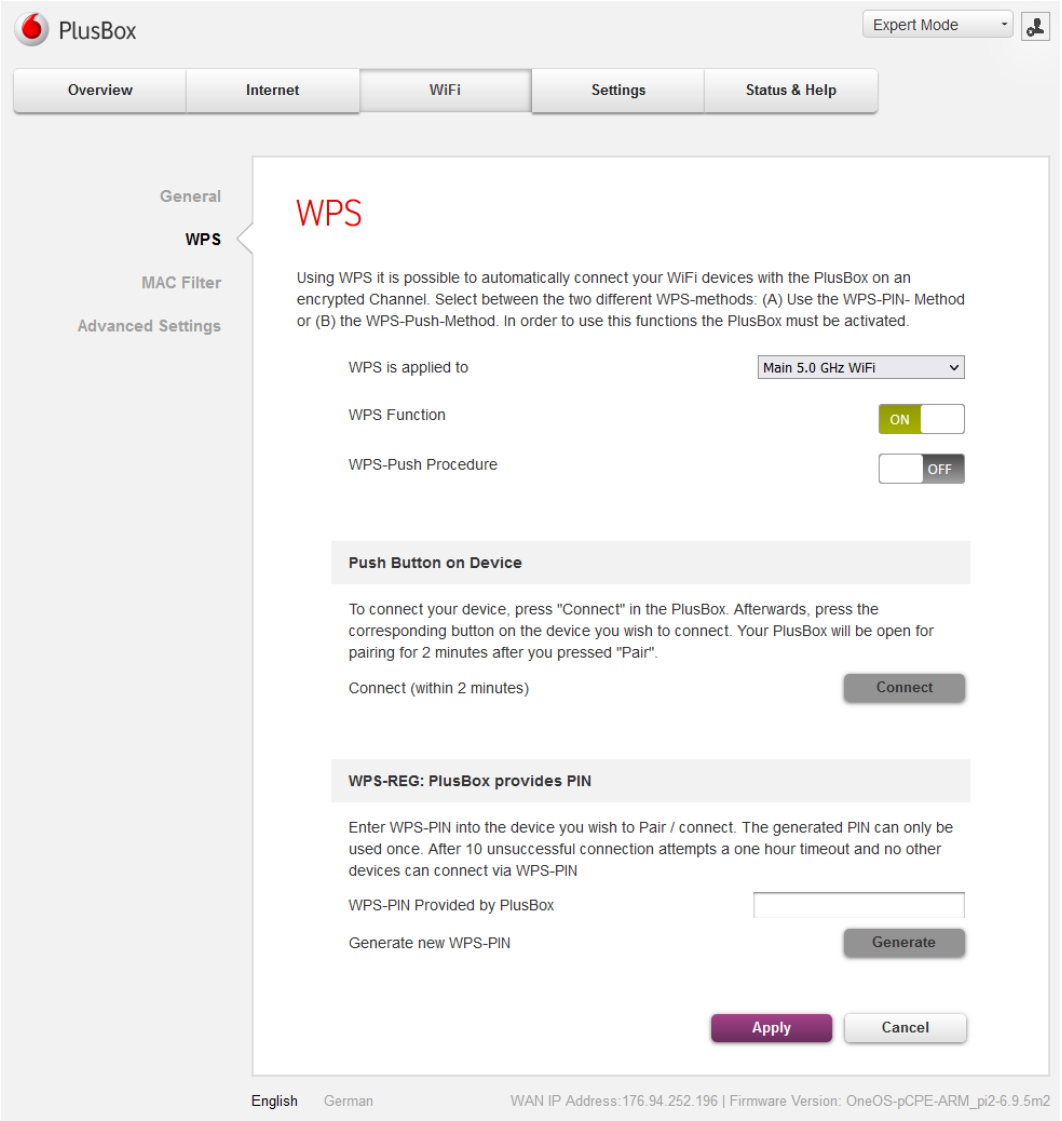


Fig. 32: PlusBox 301, WPS content page, Connecting WiFi device via WPS-REG (PIN)

4. Immediately afterwards, activate the search for a WiFi hotspot on your WiFi-enabled terminal device and enter the PIN requested by PlusBox 301.

The two devices connect via WiFi.

6.3.3 MAC Filter (Expert)

The **MAC Filter** content page is available in Expert mode only.

The security advantage of MAC filtering (MAC = **M**edia **A**ccess **C**ontrol) lies in the fact that only devices that are registered with their **MAC address**, a globally unique hardware identifier, are granted access to the WiFi network.

Conversely, you can also use the MAC filter to exclude from accessing the WiFi network certain WiFi devices whose MAC address is known to you, so that the MAC filter list acts as a **blacklist** in this case.

CAUTION

As long as you have not transferred a newly created **entry** in the MAC filter list to PlusBox 301 using the **Apply** button, it can be edited and **may be accidentally overwritten or deleted**! If you want to create several entries in succession, it is therefore advisable to transfer the new entries to PlusBox configuration from time to time to be on the safe side.

Proceed as follows to add a network device to the MAC filter list of PlusBox 301:

1. **Activate** the **MAC Filter** slider for the desired WiFi (main WiFi or Guest WiFi).
2. Select from the list box whether you want to **Allow** or **Deny Access for listed devices.**
3. Enter a meaningful **Device Name** in the text field.
4. In the **MAC Address** text fields, enter the MAC address of the device (often found on its underside):

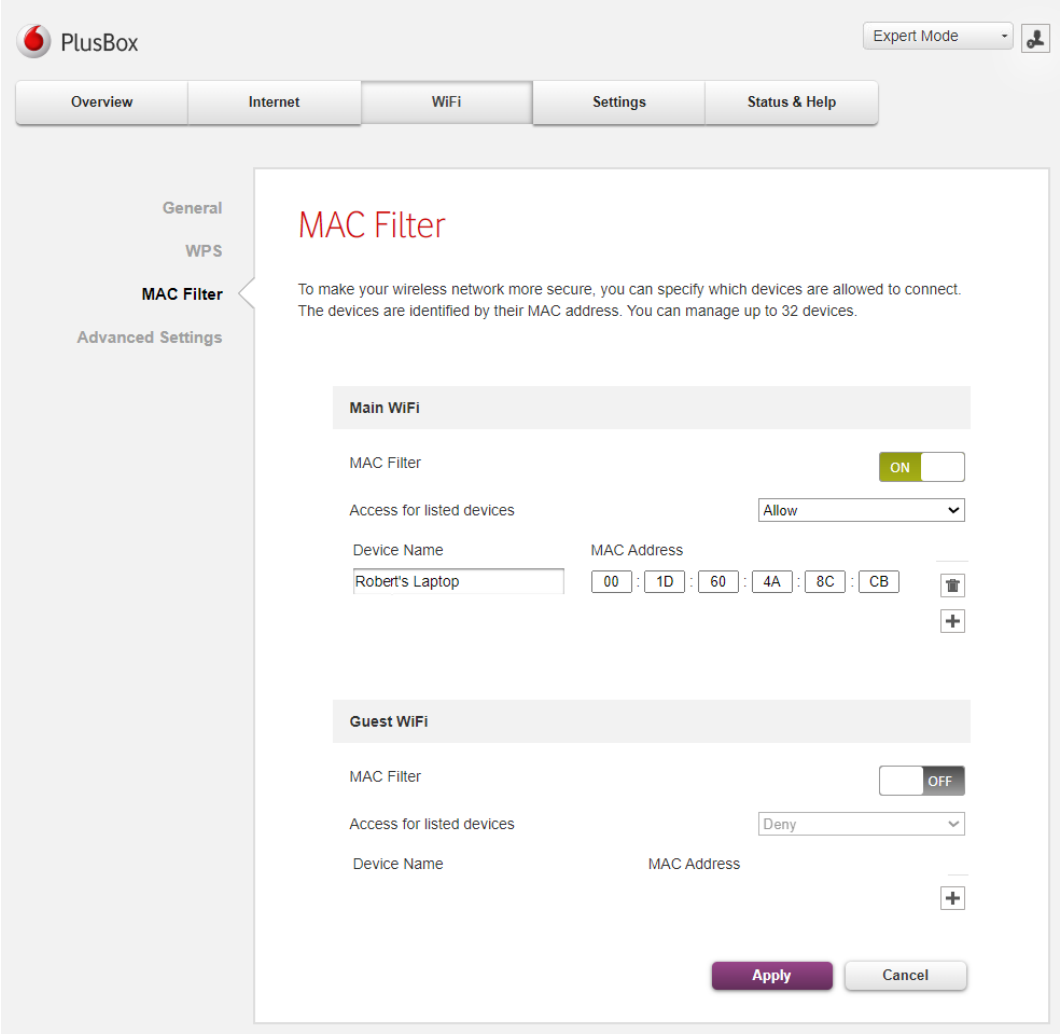


Fig. 33: PlusBox 301, MAC Filter content page

5. If required, **add** another **entry** using the + (plus) button and repeat steps 3 and 4 for the other network device. You can create up to 32 MAC filter entries.
6. If necessary, **delete** superfluous **entries** using the (rubbish bin) button.
7. Click the **Apply** button at the bottom of the window.

6.3.4 Advanced Settings (Expert)

The **Advanced Settings** content page, in which you can make some default settings for your WiFi networks, is available in Expert mode only:

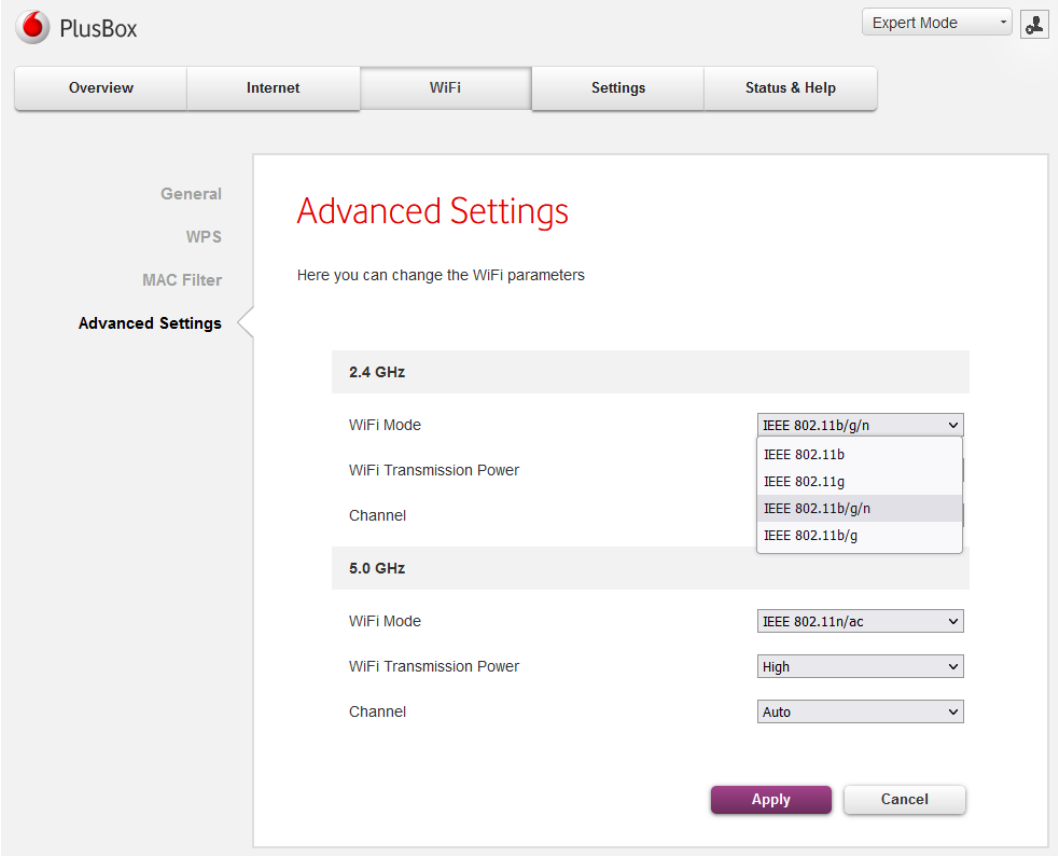


Fig. 34: PlusBox 301, Advanced Settings content page

If necessary, change the following settings for the 2.4 GHz and 5.0 GHz frequency bands:

- **WiFi Mode**: desired WiFi standard supported by PlusBox 301
- **WiFi Transmission Power**: high, medium or weak
- **Channel**: Change to any radio channel **between 1 and 12** to avoid crowded radio channels that reduce the bandwidth, alternatively **Auto** mode, by which PlusBox 301 automatically searches for a suitable radio channel

Apply the changes.

6.4 Settings

This section describes the functions of the **Settings** main menu.

6.4.1 PlusBox Password (Basic and Expert)

The **PlusBox Password** content page, on which you can change the access data for PlusBox 301, is available in both Basic and Expert mode.

CAUTION

For security reasons, Vodafone recommends for setup (see Section 5.2) after the first login to change the access data on the label on the underside of PlusBox 301 to a user name and a password of your choice.

Make a note of the changed access data and keep them in a safe place. You can also **back up** the **configuration** in the PlusBox and on a computer connected to the PlusBox (see Section 6.4.3).

You can use this **backup file** to reload the saved configuration. This is even possible using the backup file from the computer after resetting the PlusBox to the factory settings (e.g. if you have forgotten the password).

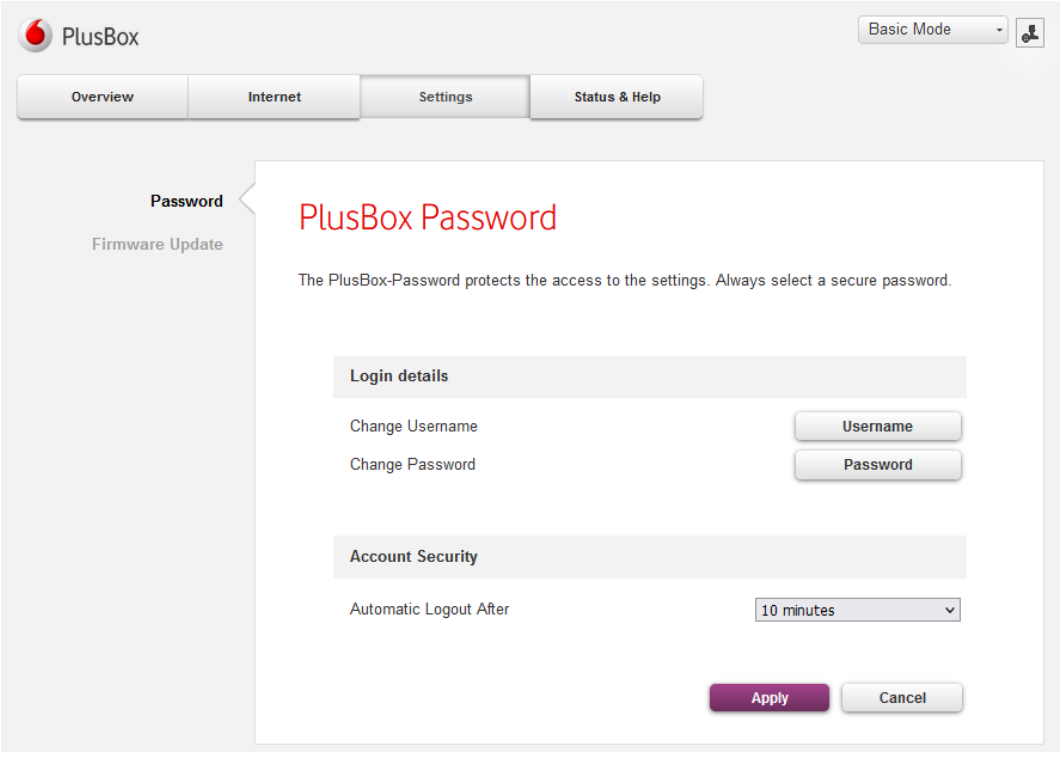


Fig. 35: PlusBox 301, PlusBox Password content page

Change the following settings:

- **Username**: In the editing window popping up, you need to enter the old username, the desired new username (twice for confirmation) and then **save** the changes.
- **Password**: Enter your old password in the pop-up input window and then proceed as described in Section 6.3.1, step 7.
- **Automatic Logout After**: Select the desired time period from the list box – 5, 15 or 30 minutes.

Apply the changes.

6.4.2 Firmware Update (Basic and Expert)

The **Firmware Update** content page is available in both Basic and Expert mode.

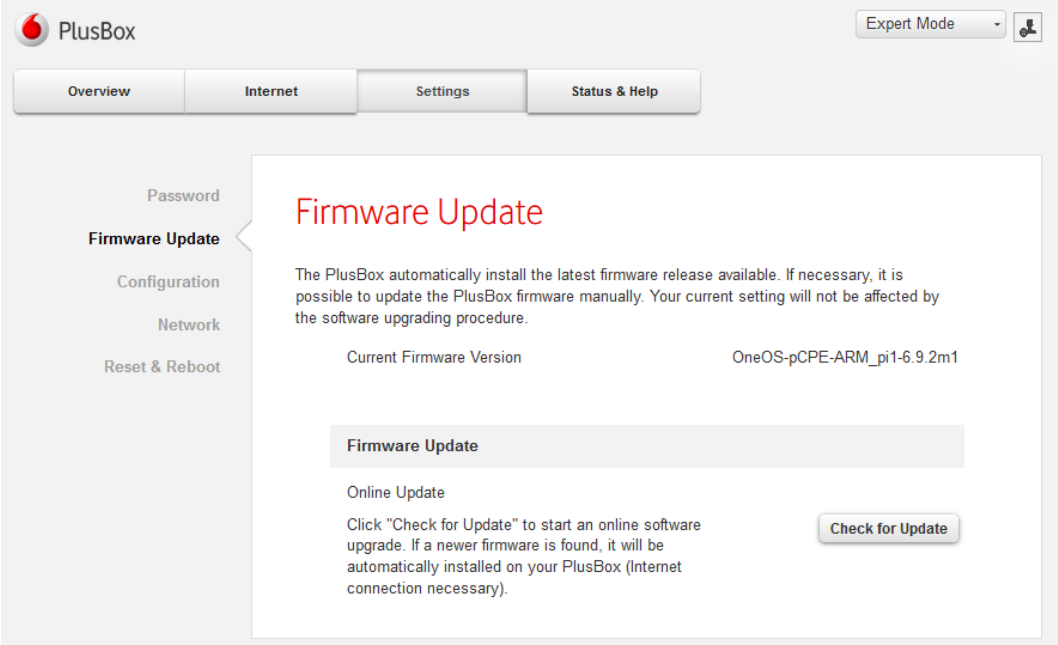


Fig. 36: PlusBox 301, Firmware Update content page

The **Current Firmware Version** is displayed in the upper area.

To start an **Online Update** of the firmware, proceed as follows:

1. Click **Check for Update**.

A pop-up warning message opens that all connections (Internet, Voice and LAN connections) will be disconnected during restart of PlusBox 301 if a new firmware version is available.

2. Confirm the warning message.

Depending on the current firmware status, you will be informed that the firmware found on PlusBox 301 is already the latest version, or a newer version will be installed, which may take a few minutes.

3. Confirm the respective messages.

6.4.3 Configuration (Expert)

The **Configuration** content page is available in Expert mode only. This is where you specify how and where a backup file containing the latest configuration is saved.

NOTE

PlusBox 301 automatically backs up the configuration file once a day and additionally once a week.

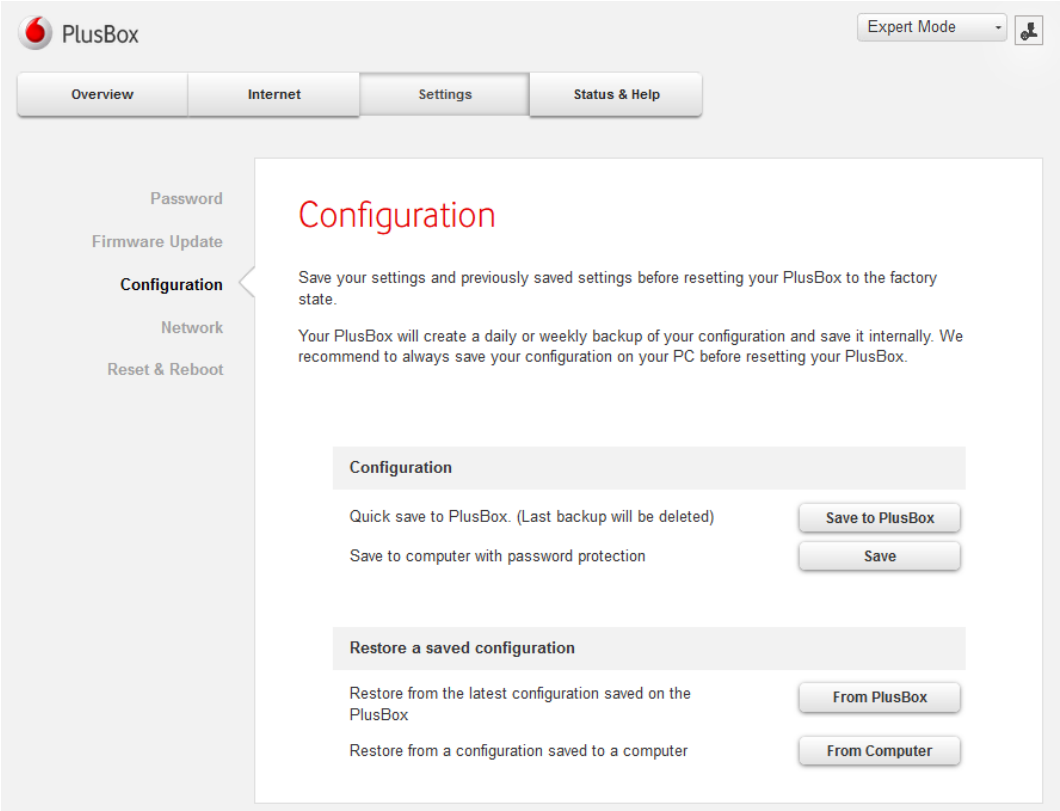


Fig. 37: PlusBox 301, Configuration content page

Proceed as follows to **save a current configuration file for later use** (e.g. after resetting to the factory settings, see Section 6.4.5) a:

1. Create a backup file:
   - To save a **backup file** to the PlusBox, click the **Save to PlusBox** button.
   - To save a **backup file** to your computer, click the **Save** button.

In both cases, a **pop-up editing window** opens in which you can (Save to PlusBox) resp. must **enter** a **comment** (Save to computer). When saving to a computer, a **Password** is also required:

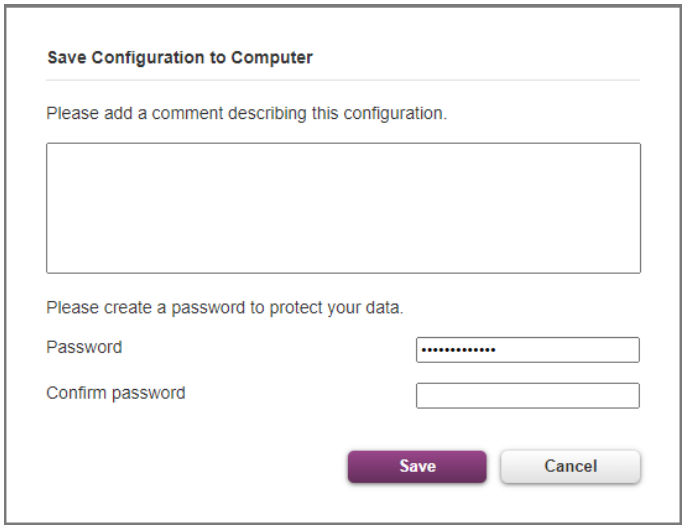


Fig. 38: PlusBox 301, Saving configuration to computer

2. Click **Save** to close the pop-up window.

3. Then click the **Apply** button in the **Configuration** content window to transfer the configuration to PlusBox 301.

To **restore a saved configuration file**, proceed as follows:

1. Load the configuration file into PlusBox:
   - using the **From PlusBox** button

   or
   - using the **From Computer** button.
2. Confirm the security message in the window that opens.

When loading the configuration file from the computer, your directory system opens for file selection. When loading from PlusBox, the following pop-up window opens:

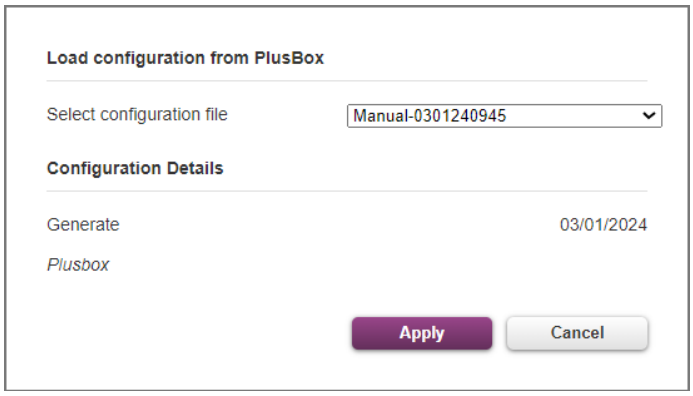


Fig. 39: PlusBox 301, Loading configuration file from PlusBox

3. **Select** the desired **configuration file** from the list box: either the last daily (as shown in the example) or the last weekly backup file.

NOTE

A backup file is automatically generated once a day and once a week. As long as you have not made a manual backup, up to 2 files are available. With manual backups, a further backup file is created in addition to the two automatic backup files (daily and weekly). During commissioning, the automatic backup files are not yet available, which is why the number of backup files differs depending on the period (first 24 hours, first week and thereafter).

4. Load the backup file into PlusBox.

The configuration is carried out. This may take some time.

5. Confirm the final message with **OK**.

6.4.4 LAN Network (Expert)

The **LAN Network** content page is available in Expert mode only.

It offers configuration options for (a maximum of) four different local networks, which are displayed as submenus in the navigation bar after clicking the **Network** submenu:

- **LAN**
- **Voice LAN** – available only for the **IP Voice + Data** connection
- **WiFi** (your main WiFi network) – available only for **IP Voice + Data** connections
- **Guest WiFi** – available only for **IP Voice + Data** connections

Common to all network configuration pages is the **Network Settings** area (shown here using the **LAN Network** example):

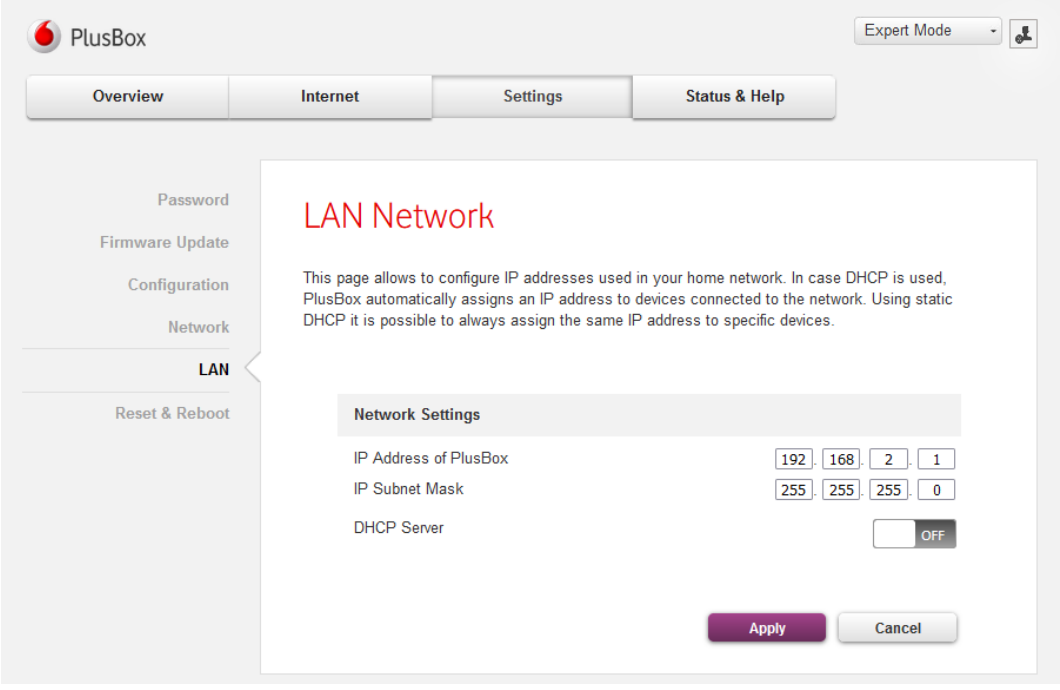


Fig. 40: PlusBox 301, LAN Network content page, before DHCP activation

If required, activate the **DHCP server** (DHCP = **D**ynamic **H**ost **C**onfiguration **P**rotocol) to dynamically assign IP addresses to the computers in the LAN (or Voice LAN, WiFi or Guest WiFi networks).

6.4.4.1 LAN Network (Expert)

The **LAN Network** content page is available in Expert mode only, in two different versions:

- **IP Voice only** connection type – here you define only those network settings that must be configured for access to the **user interface of your PlusBox**.

  No other network components are provided for data traffic. This means that you **cannot connect any other devices to the LAN.**

  The **DHCP server** for dynamic IP address assignment must be located in the same local network as the PlusBox.
- **IP Voice + Data** connection type – here you define the IP address range for **all LAN components** (PlusBox and other devices).

Fig. 41 shows the configuration options for the **LAN** for **IP Voice + Data** connections:

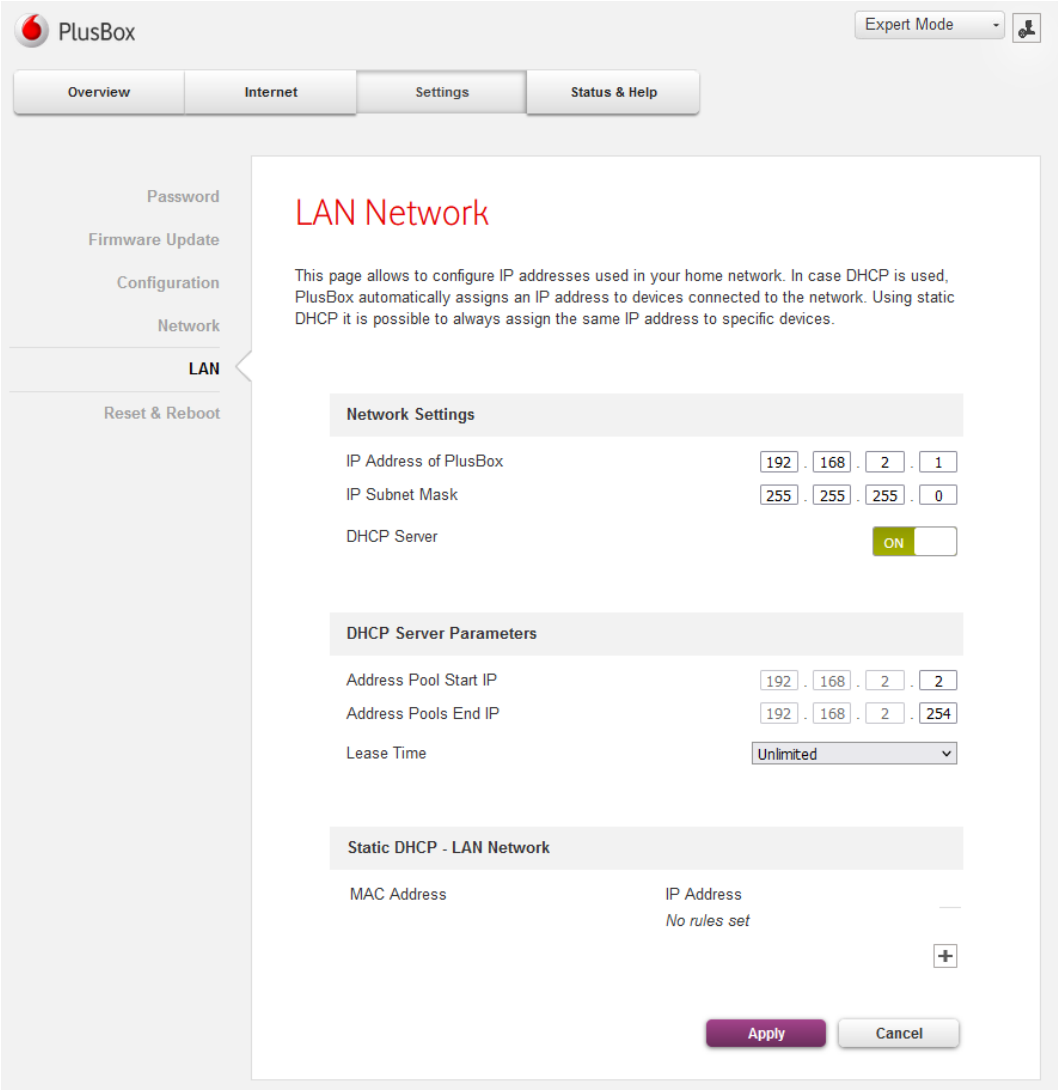


Fig. 41: PlusBox 301, LAN Network content page (IP Voice + Data)

Proceed as follows to **define** the **DHCP settings** for your **LAN**:

1. Enter the **IP address of PlusBox** in the text fields provided.

The **IP Subnet Mask** is automatically derived from this entry.

2. **Activate** the **DHCP Server** using the slider.

The **DHCP Server Parameters** window area is automatically expanded.

3. Define an **address pool** between **Address Pool Start IP** and **Address Pool End IP**, from which the server assigns the addresses to the connected computers.

NOTE

The IP addresses with 1 and 255 for the last octet (last input field) are reserved elsewhere in the network and must not be used.

4. For the **Lease Time**, select either **24 hours** and **Unlimited** from the list field.
5. If you want to define that a specific network device always gets the same IP address assigned dynamically, enter the MAC address of this device in the **Static DHCP - LAN Network** area.
6. **Apply** the configuration of the DHCP server to the PlusBox.

6.4.4.2 Voice LAN Network (Expert)

The **Voice LAN Network** content page is available for the **IP Voice + Data** connection only, and only in Expert mode.

Its configuration is largely identical to that for the **LAN Network** (see Section 6.4.4.1), except for the following differences:

- **Interface Selection:** In this area, select the port to which the IP PBX is connected:
  - **ETH 0/3** – the **IP PBX** must be **physically connected** to this port for the Voice LAN Network to be **configured automatically**

  or

  - **ETH 0/0-0/3** – for manual configuration of a **VLAN** for the Voice LAN

    PlusBox assigns IP addresses from the configured address pool to the telephone terminal devices that are connected to the IP PBX. The IP addresses of the connected telephones are therefore displayed on PlusBox Overview page, see Fig. 43.
- **DHCP Client:** Activate this option if he **PlusBox** is to be regarded **as a DHCP client** in the Voice LAN Network. In this case, the IP address is assigned by the connected IP PBX.
- **DHCP Server:** Activate this option if the **PlusBox** is to be regarded **as a DHCP server** in the Voice LAN Network. In this case, the IP address is assigned by the PlusBox; IP addresses are displayed in the overview for the connected telephone terminals.

Voice LAN Network via automatic configuration

Automatic configuration example for a **Voice LAN Network**:

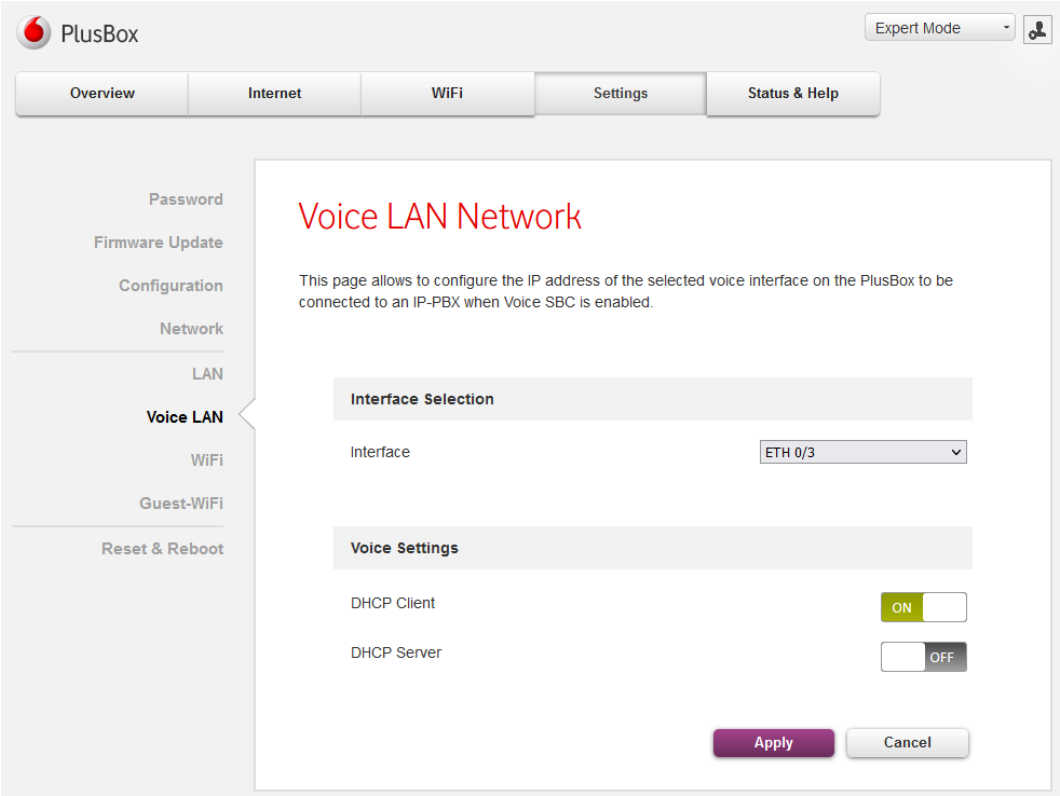


Fig. 42: PlusBox 301, Voice LAN Network content page, ETH 0/3 configuration (IP Voice + Data)

Voice LAN Network via VLAN

Configuration example for a **Voice LAN Network** realized via a separate **VLAN:**

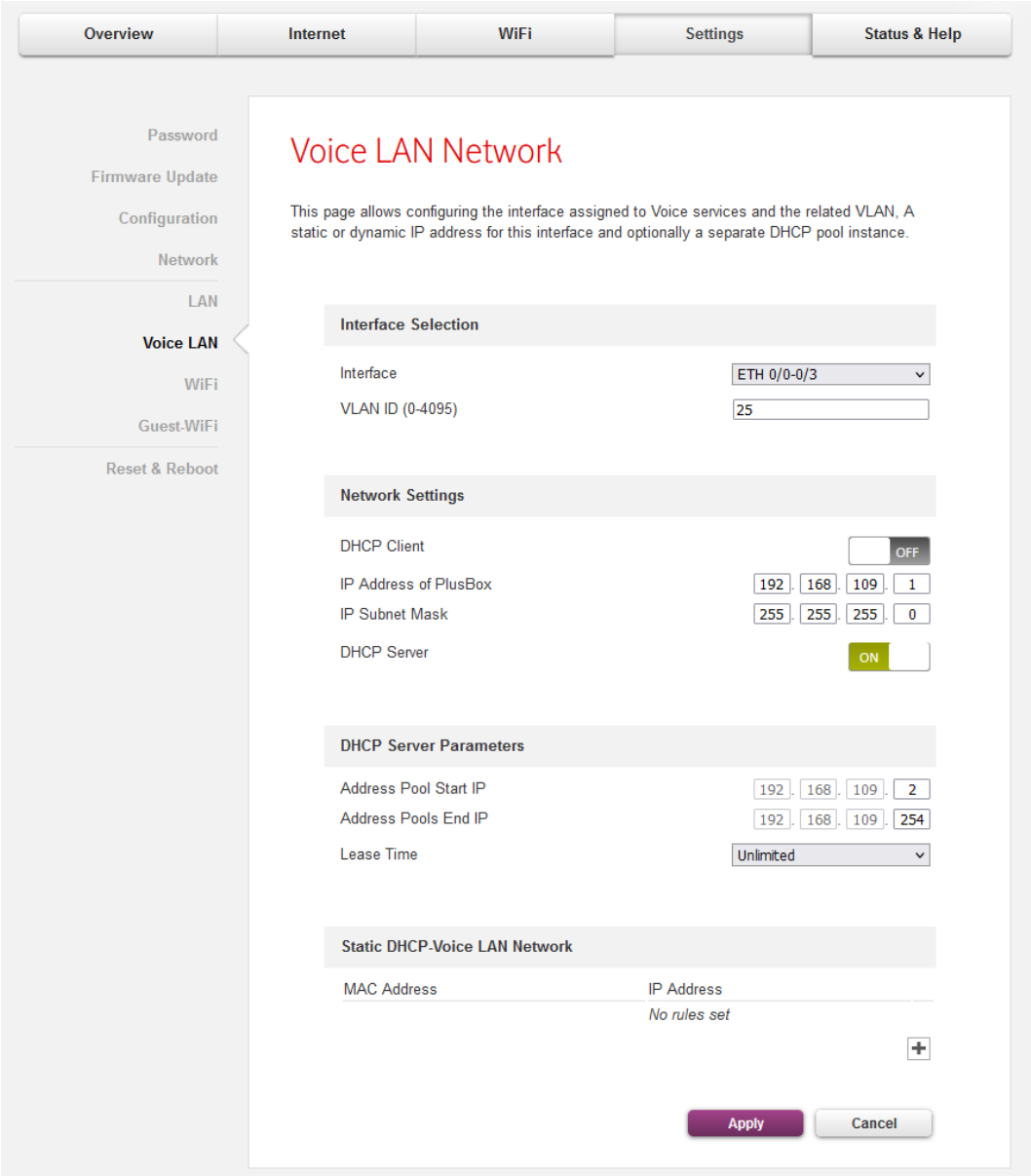


Fig. 43 : PlusBox 301, Voice LAN Network content page, VLAN configuration (IP Voice + Data)

6.4.4.3 WiFi and Guest WiFi (Expert)

The **WiFi** and **Guest WiFi** content pages (Guest WiFi is identical in configuration to WiFi) are available for **IP Voice + Data** connections only, and only in Expert mode.

Proceed as follows to define the **DHCP settings** for your **WiFi** or **Guest WiFi**:

1. Enter the **IP Address of PlusBox** in the text fields provided.

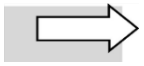
The **IP Subnet Mask** is automatically derived from this entry.

2. **Activate** the **DHCP Server** using the slider.

The **DHCP Server Parameters** window area is automatically expanded.

3. Define an **address pool** between **Address Pool Start IP** and **Address Pool End IP**, from which the server assigns the addresses to the connected computers.

NOTE



The IP addresses with 1 and 255 for the last octet (last input field) are reserved elsewhere in the network and must not be used.

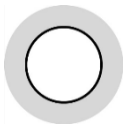
4. For the **Lease Time**, select either **24 hours** or **Unlimited** from the list field.
5. If you want to specify that a specific network device always gets assigned the same IP address dynamically, enter the MAC address of this device in the **Static DHCP – WiFi Network** area.
6. **Apply** the configuration of the DHCP server to the PlusBox.

6.4.5 PlusBox Reset & Reboot (Expert)

The **Reset & Restart** content page is available in Expert mode only.

Use the **Reset** button to reset PlusBox 301 to its factory settings.

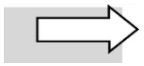
CAUTION



As the daily backups are not retained when resetting your PlusBox 301 to the factory settings, **you should in advance save the configuration file to prevent possible data loss!** To back up the configuration file, see Section 6.4.3.

Use the button **Restart** button to restart PlusBox 301 in the event of a system failure.

NOTE



Alternatively, you can reset the PlusBox to its factory settings by inserting a narrow, elongated object (e.g. a bent paper clip) into the **Reset hole** on the back of PlusBox and hold it down for **at least 5 seconds.** The narrow hole is located between the ETH 1/0 ports and the On/Off switch.

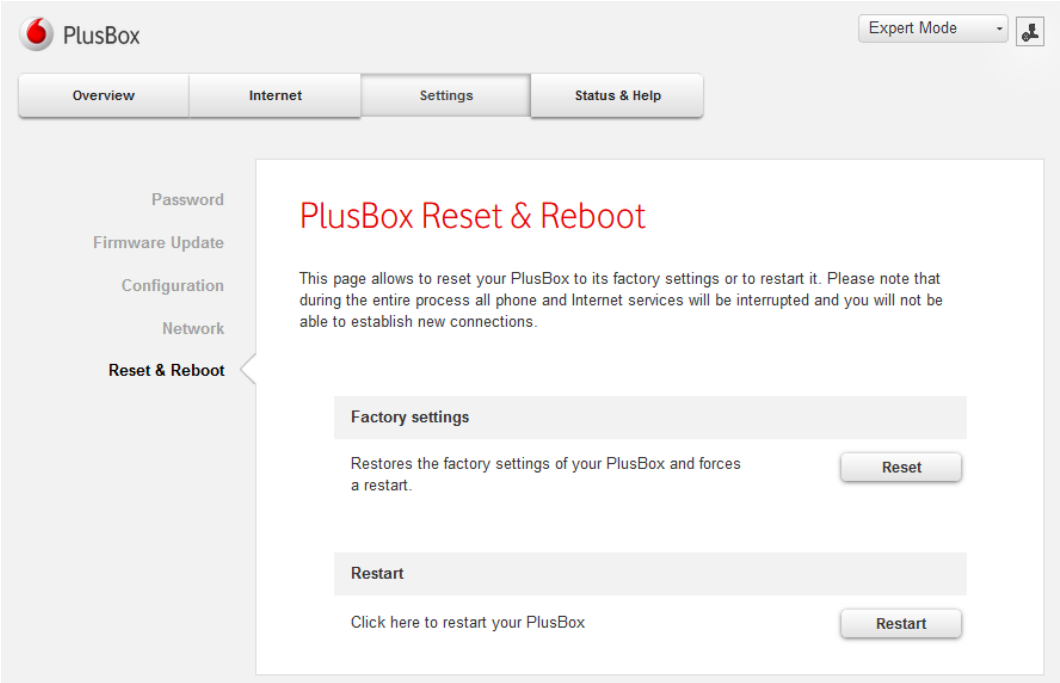


Fig. 44: PlusBox 301, PlusBox Reset & Reboot content page

After clicking the button, confirm the security message in the pop-up window that opens.

6.5 Status & Help

This section describes the functions of the **Status & Help** main menu.

6.5.1 PlusBox Status (Basic and Expert)

The **PlusBox Status** content page is available in both Basic and Expert mode. It is **purely an overview page** of the status of PlusBox functionality, which is divided into the following areas:

- Internet
- DSL
- LAN Network
- Voice LAN Network (IP Voice + Data connection only)
- Ethernet ports
- Main WiFi
- Guest WiFi
- Telephony
- System

In the **Internet** area at the top, the public **IP Address** of your Internet access and that of PlusBox 301 as a **Gateway** and the status of the **Firewall** (on/off).

Under **DSL**, the **DSL Mode** (e.g. Annex-B or Annex-J), the **Link Status** and the **Bitrate** for downstream and upstream traffic are displayed, as well as the **Packet Counter** for sent and received packets.

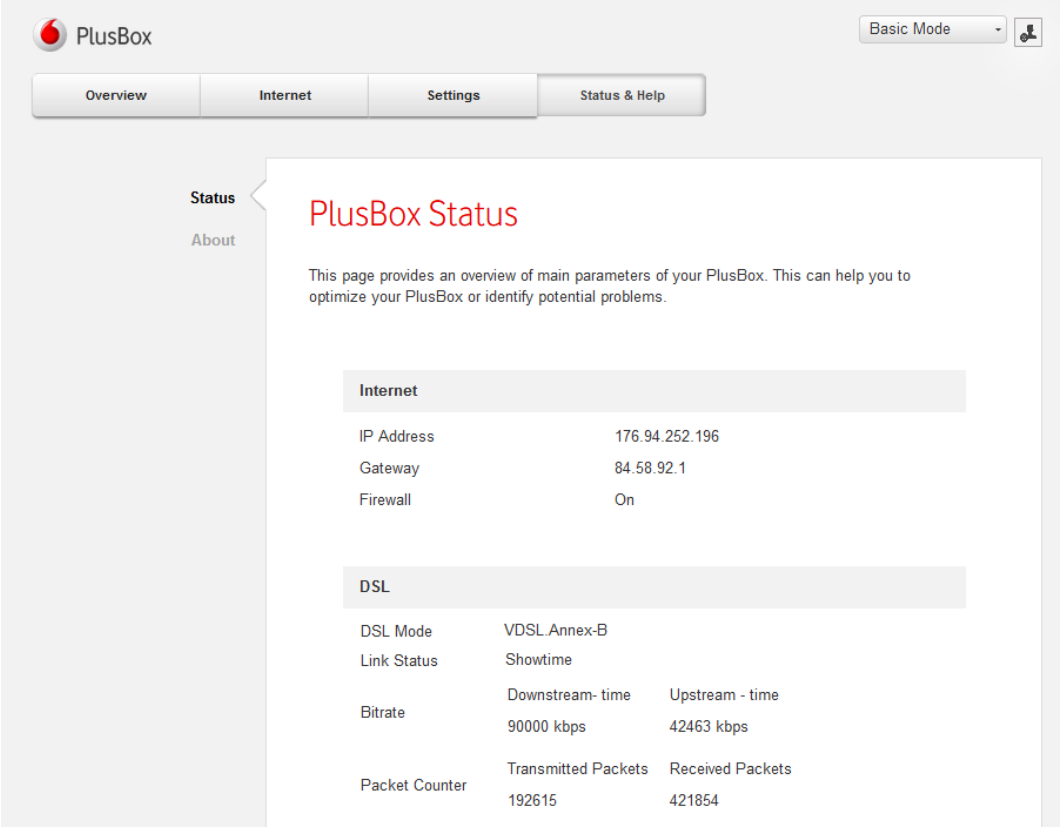
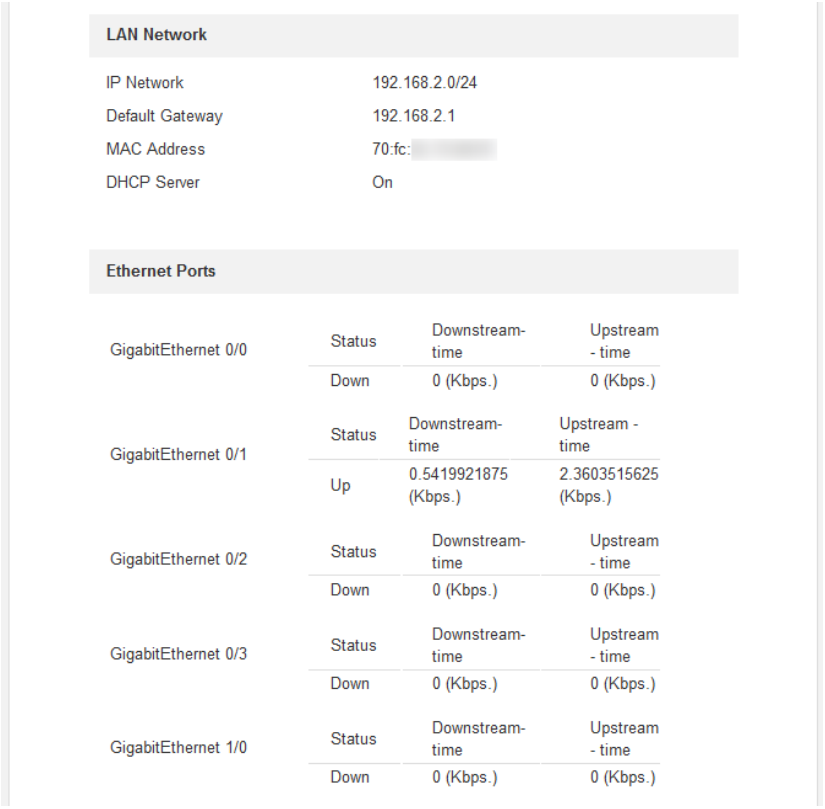


Fig. 45: PlusBox 301, PlusBox Status content page, Internet and DSL

In the **LAN Network** area, the private address range of your **IP Network** is displayed, as well as the **Default Gateway,** the **MAC Address** of PlusBox 301 and the status of the **DHCP Server** (On/Off).

For each of the **Ethernet Ports**, the **Status** (Up/Down), the **Downstream** and the **Upstream speed** are displayed:



LAN Network

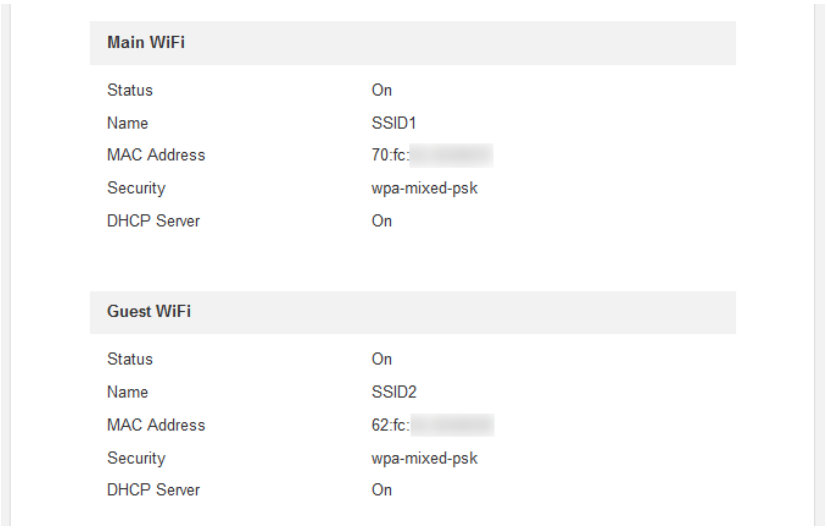
IP Network	192.168.2.0/24
Default Gateway	192.168.2.1
MAC Address	70:fc:
DHCP Server	On

Ethernet Ports

GigabitEthernet 0/0	Status	Downstream-time	Upstream - time
	Down	0 (Kbps.)	0 (Kbps.)
GigabitEthernet 0/1	Status	Downstream-time	Upstream - time
	Up	0.5419921875 (Kbps.)	2.3603515625 (Kbps.)
GigabitEthernet 0/2	Status	Downstream-time	Upstream - time
	Down	0 (Kbps.)	0 (Kbps.)
GigabitEthernet 0/3	Status	Downstream-time	Upstream - time
	Down	0 (Kbps.)	0 (Kbps.)
GigabitEthernet 1/0	Status	Downstream-time	Upstream - time
	Down	0 (Kbps.)	0 (Kbps.)

Fig. 46: PlusBox 301, PlusBox Status content page, LAN Network and Ethernet Ports content page

In the **Main WiFi** and **Guest WiFi** areas, the **Status** of the respective WiFi network, its **Name**, **MAC Address** and encryption method (**Security**) are displayed. It is also indicated whether or not **DHCP** is active:



Main WiFi

Status	On
Name	SSID1
MAC Address	70:fc:
Security	wpa-mixed-psk
DHCP Server	On

Guest WiFi

Status	On
Name	SSID2
MAC Address	62:fc:
Security	wpa-mixed-psk
DHCP Server	On

Fig. 47: PlusBox 301, PlusBox Status content page, Main WiFi and Guest WiFi

Finally, the **System** area contains **general hardware and firmware information** about your PlusBox 301:

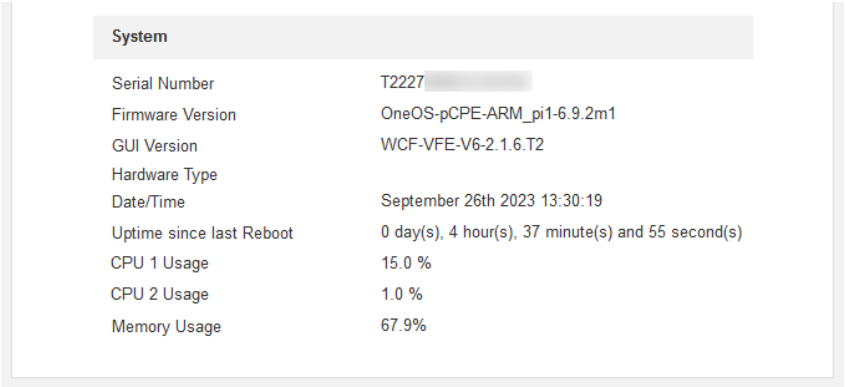


Fig. 48: PlusBox 301, PlusBox Status content page, System

6.5.2 Telephony, Voice LAN Network

The display in the **Telephony** area differs depending on the connection type, as shown in the following sections. The **Voice LAN network** area is only relevant for IP Voice + Data connections.

6.5.2.1 IP Voice only connection

In the IP Voice only connection, **no call number** is **displayed** as the subscriber and registration status are managed via your IP PBX.

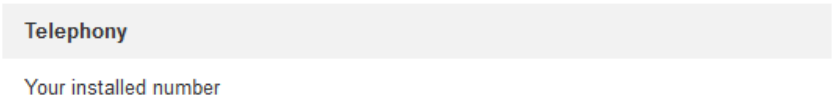


Fig. 49: PlusBox 301, Telephony status content area (IP Voice only)

NOTE

For this connection type, you can select any LAN port from **ETH 0/0 to ETH 0/3** to **connect** your IP PBX.

6.5.2.2 IP Voice + Data connection

The **Voice LAN Network** area can have two different **configurations** when IP Voice + Data is connected, depending on which affects the **function of the Ethernet port of PlusBox** to which the IP PBX is connected, see Section 6.4.4.2:

- **Voice LAN manual VLAN configuration:** The IP PBX can be **connected to any port ETH 0/0 to ETH 0/3.**
- **Automatic Voice LAN configuration:** The IP PBX must be **physically connected to the ETH 0/3 port** so that the Voice LAN receives its default IP configuration.

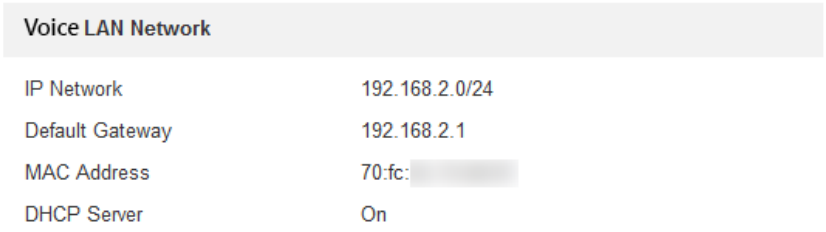


Fig. 50: PlusBox 301, Status content page, Voice LAN Network (IP Voice + Data)

6.5.3 Diagnostic program (Expert)

The **Diagnostic program** content page is available in Expert mode only. You can start various tests to diagnose the connections using the respective buttons. For the **Ping Test,** enter in the corresponding text field the **host name** or **IP address** of the server whose connection status you want to test:

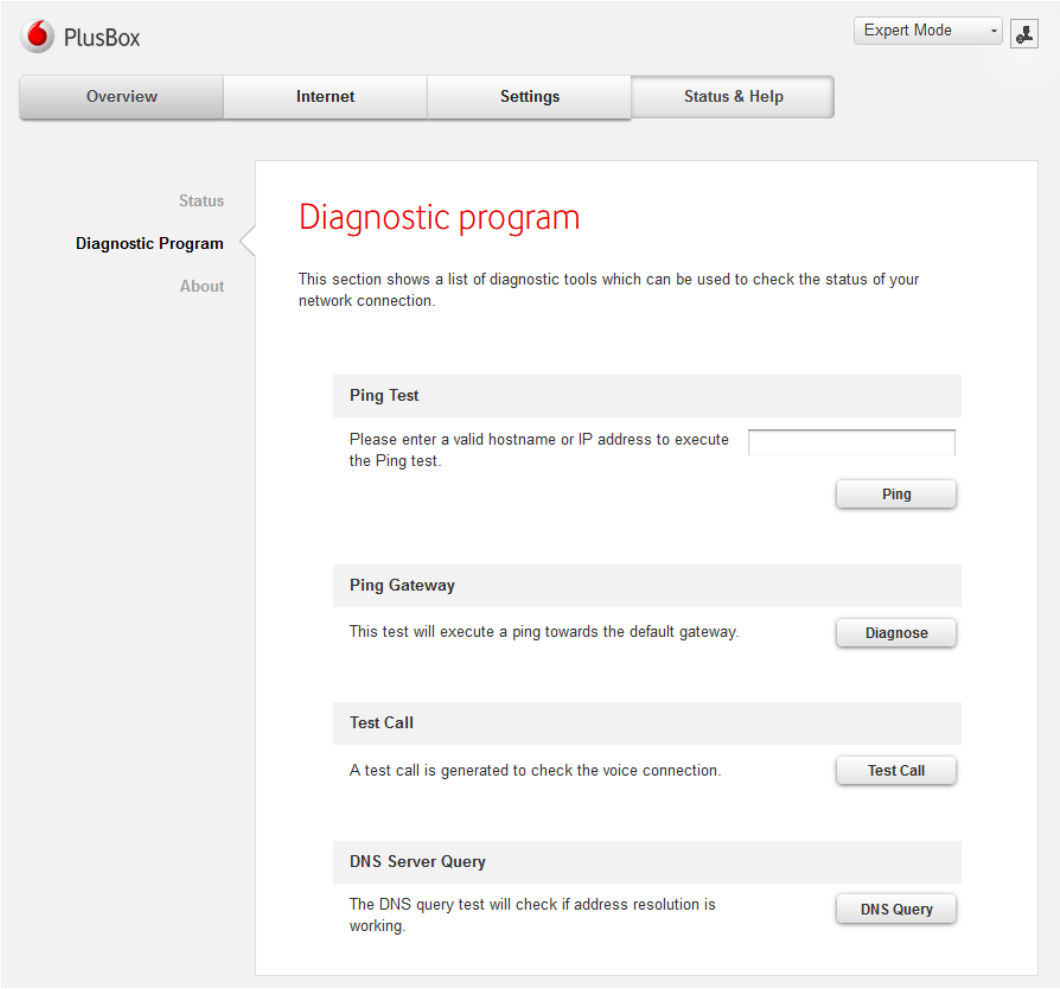


Fig. 51: PlusBox 301, Diagnostic program content page

NOTE

The **Test Call** function is **not available** for **IP Voice + Data** and **IP Voice only** connections (even if it is displayed for IP Voice only connections). For these connection types, this functionality is provided by the IP PBX. Further information can be found in the IP PBX manufacturer's documentation.

As soon as the respective test has been executed, a separate pop-up window opens to inform you about **successful execution (with further information on the tested parameters)** or an **error message**.

Confirm the message.

6.5.4 About (Basic and Expert)

The **About** content page is available in both Basic and Expert mode. It is **purely an overview page** of the **open source software modules** used for programming PlusBox user interface, of their respective **version** and **licence type**.

7 Troubleshooting

This chapter provides solutions to the most common problems with PlusBox 301.

7.1 Error messages

This section lists the most common error messages and solutions for the errors displayed.

7.1.1 Incomplete Modem Installation Code (MIC)

Error message:

Wrong MIC. The entered PlusBox Installation Code entered is invalid or not complete. Please enter the PlusBox Installation Code again.

Solution:

Enter the modem installation code from the welcome letter again.

7.1.2 Invalid Modem Installation Code (MIC)

Error message:

Invalid MIC. Please register all 22 characters according to your welcome letter.

Solution:

Check whether you entered the 2 letters and 20 digits of the modem installation code from the welcome letter and correct your entry.

7.1.3 Invalid user name or password or password

Error message:

Invalid Username or Password

Your Username or Password are incorrect. Please try again.

Solution:

Enter your username and password again. You will find this information on the bottom of PlusBox 301.

7.1.4 Captcha incorrectly adopted

Error message:

Designation not correct. Please try again.

Solution:

To confirm your changes, re-enter the characters from the Captcha image in the text field.

If you cannot recognise some characters, request a new captcha via the button .

7.1.5 Activation failed

Error message:

Provisioning failed. Authentication with Provisioning Server was unsuccessful. Please try again later.

or

The Provisioning Server is not reachable.

Solution:

Check that the plugs of the purple DSL cable between the telephone socket and PlusBox 301 are firmly plugged into the correct sockets/ports of these two devices: **TAE-F** socket on the telephone socket (usually labelled with **F** or a non-crossed-out telephone) and **DSL** port on PlusBox 301.

If activation does not work despite correct cabling and firmly connected plugs, try again a short time later.

7.1.6 Configuration page is not displayed

Error message:

You disabled JavaScript. Please enable JavaScript in your browser settings to optimize the display quality.

Solution:

Activate JavaScript in the browser settings so that the configuration screen is displayed with all the required input/selection elements.

7.2 No WiFi connection to the user interface

Can't connect to the user interface of your PlusBox 301 via WiFi?

This is not an error, but a **security precaution**, as WiFi access is easier to attack from outside than LAN access. Access to the user interface is possible at any time via a cable connection your LAN.

8 Customer service

In case of trouble, Vodafone **Service Hotline** will help you when you call the number given in the welcome letter. You will also find this number on the invoices for your Anlagen-Anschluss Plus connection.

WARNING

Never use damaged devices or accessories – danger to life due to electric shock!
If your PlusBox 301 or one of its accessories is damaged, please call Vodafone Business immediately to request a replacement, using the number provided in the welcome letter.

9 Configuring security settings (examples)

This chapter describes the default security settings in PlusBox 301 configured for the LAN (see Section 9.1) and the Demilitarized Zone (DMZ, see Section 9.4), as well as examples of some typical security-relevant configuration scenarios.

You can use the following configuration options (individually or in combination) to establish network security:

- Firewall rules (see Section 6.2.2)
- Port Mapping (see Section 6.2.3)
- Configuration of the DMZ / Exposed Host (see Section 6.2.4)
- VPN tunnelling

NOTE

In the following, individual work steps are no longer described in detail as in Sections 6.2.2 to 6.2.4 for the respective functions. This chapter focuses on briefly presenting overview illustrations of configuration scenarios and on these scenarios' implementation in the PlusBox user interface, shown in the screenshots below.

The **overview illustrations** for the respective configuration scenarios are structured as follows:

- In the default configuration for LAN and DMZ, all allowed and denied data traffic flows are displayed using wide arrows. For all other configuration examples, only the relevant elements are shown, i.e., those that deviate from the default configuration.
- A **wide red arrow** without text means that all data traffic between these two subnets/firewall zones is denied.
- A **wide green arrow** without text means that all data traffic between these two subnets/firewall zones is allowed.
- A **wide green arrow with further details** means that the data traffic between these two subnets/firewall zones is restricted as specified.
- The **information** next to a wide green arrow (IP address and port) always **refers to the target server**, i.e. to a computer in the network to which the arrowhead points.

9.1 LAN default configuration (IP Voice + Data)

All devices connected to **ETH 0/0 to ETH 0/3 LAN ports** of PlusBox 301, as well as the devices in the WiFi and Guest WiFi networks, **cannot be reached from the Internet** by the integrated firewall in the **default setting**, but conversely can **access Internet content**.

This **default setting** is stored on the **Firewall** page in the **Default** section, see Fig. 24.

By **default**, PlusBox 301 **firewall settings for the LAN** are determined as follows:

- Internet (WAN) → local networks LAN, Voice LAN, WiFi and Guest WiFi:
  Data traffic denied
- Local networks LAN, Voice LAN, WiFi and Guest WiFi → Internet (WAN):
  Data traffic allowed without restriction
- WiFi → LAN: Data traffic denied
- LAN, Voice LAN → WiFi: Data traffic denied
- DMZ → LAN, Voice LAN: Data traffic denied
- LAN, WiFi and Guest WiFi → DMZ: Data traffic allowed without restriction
- Voice LAN → DMZ: Data traffic allowed
- LAN → Telephony LAN: Data traffic allowed
- Voice LAN → LAN: Data traffic denied
- DMZ → Internet (WAN): Data traffic denied
- Internet (WAN) → DMZ: Data traffic allowed without restriction

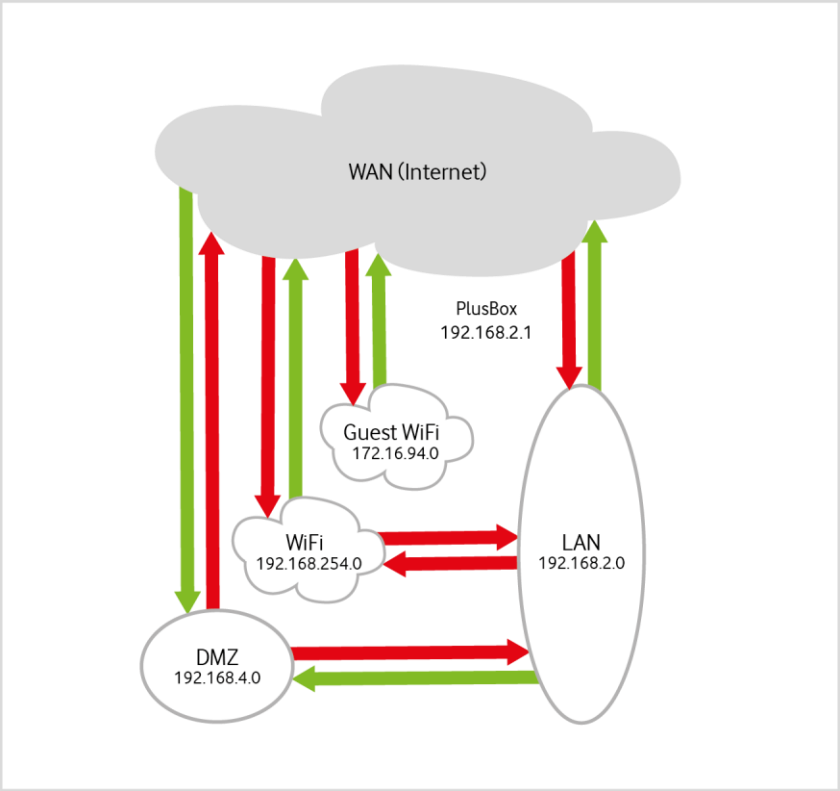


Fig. 52: PlusBox 301, Default firewall configuration for LAN (IP Voice + Data)

To make a network device in the LAN or WiFi, e.g. a server, accessible from the Internet, you must configure a **Port Mapping** from the WAN to this subnet (see Section 6.2.3). This opens the firewall for the desired service. The **IP address** and the **port number of the destination server** in your subnet is required for this configuration.

NOTES

For the sake of clarity, Fig. 52 shows the firewall configuration for the LAN without the Voice LAN zone. Data traffic allowed from and to the Voice LAN zone is shown in Fig. 53.

Section 9.3 provides the example of a PlusBox configuration of an HTTP server in the LAN that shall be accessible from the Internet as well as from the WiFi network and from the DMZ.

9.2 Voice LAN default configuration (IP Voice + Data only)

The **default firewall settings** for data traffic to and from the Voice LAN largely correspond to the default configuration for the LAN (Section 9.1), with the following **deviations or additions for the Voice LAN:**

- Voice LAN → DMZ: Data traffic allowed
- LAN → Voice LAN: Data traffic allowed without restriction
- Voice LAN → LAN: Data traffic denied

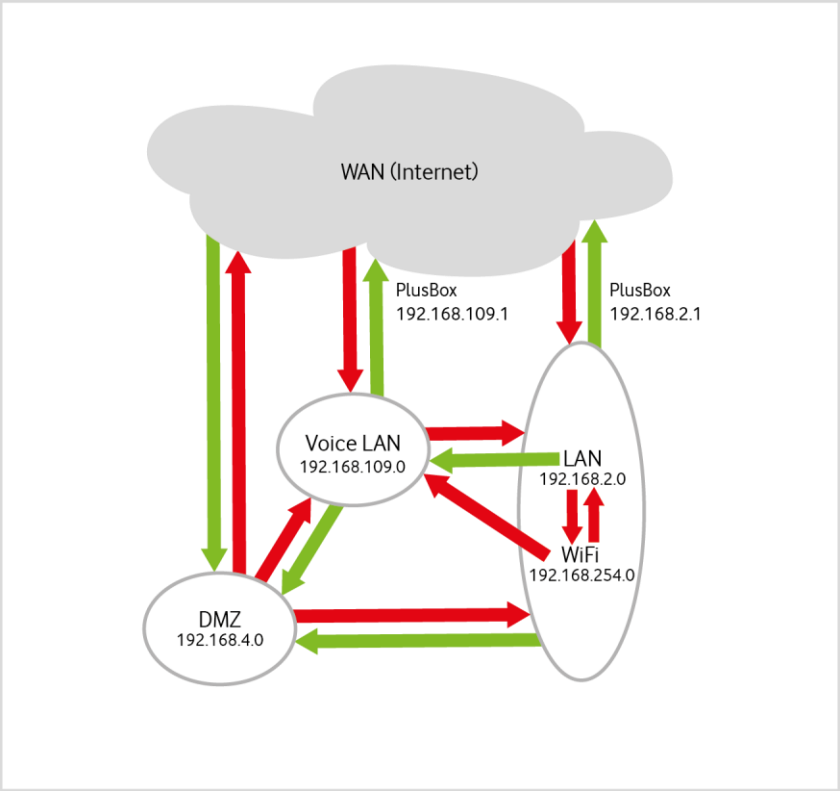


Fig. 53: PlusBox 301, Default firewall configuration for Voice LAN (IP Voice + Data)

NOTE

In order to avoid crossing lines, Fig. 53 depicts **LAN and WiFi together** and no longer explicitly shows the Guest WiFi. The arrow for denied data traffic from the Voice LAN to the LAN and the WiFi network ends at the elliptical border of the combined zone – this means that it applies to both the LAN and the WiFi network.

Conversely, the arrows that originate **within** the summarised zone apply to data traffic to the Voice LAN, but only from the zone stated right beneath the arrow's end. The data traffic direction **LAN → Voice LAN** is therefore **allowed**, whereas **WiFi → Voice LAN is denied**.

Data traffic in **LAN → Voice LAN** direction is **allowed** without restriction, e.g. to enable operation of **soft clients in the LAN.** This firewall rule is also required to enable **configuration of the IP PBX from** a computer **in the LAN.**

If you require a remote configuration option for the IP PBX via a jump host, you must explicitly enable the DMZ → Voice LAN connection.

The following sections use some application scenarios to show you how to change the default firewall rules to allow the desired data flows.

9.3 Scenario 1: HTTP server in the LAN

An HTTP server in the LAN shall be made accessible from the Internet (WAN) – initially, access is blocked by default. Computers from the WiFi network and from the DMZ should also be able to access the HTTP server.

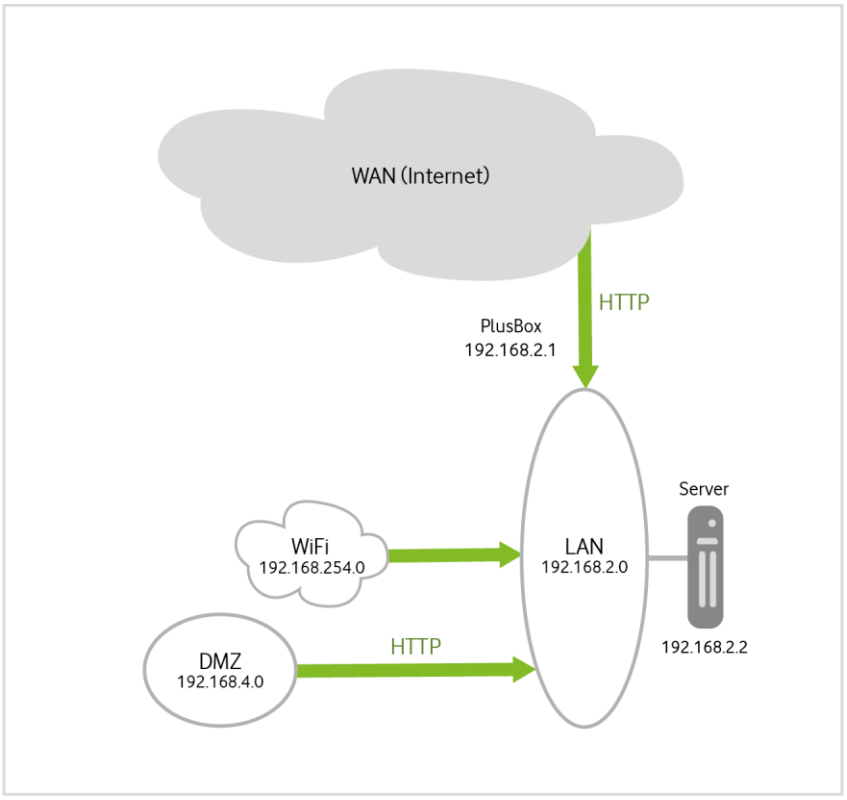


Fig. 54: PlusBox 301, HTTP server in the LAN – sample configuration

Proceed as follows to configure the access options mentioned:

1. For WAN-to-LAN traffic, define a **Port Mapping** (see Section 6.2.3) **to target port 80 (HTTP)** for the IP address of your HTTP server in the LAN (192.168.2.2 in the sample configuration):

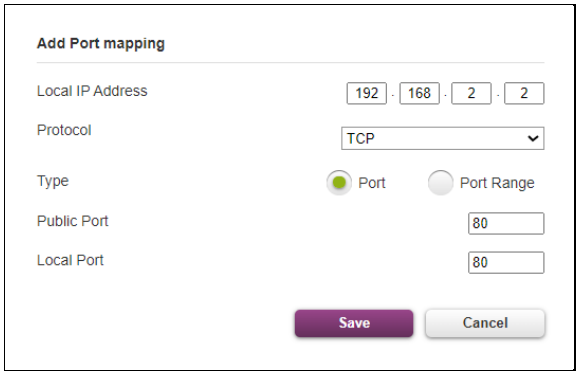


Fig. 55: PlusBox 301, Port Mapping from WAN to LAN for HTTP

2. Switch **On**, using the slider on the Firewall configuration page (see Section 6.2.2), **WiFi to LAN zone traffic allowed** (without restriction):

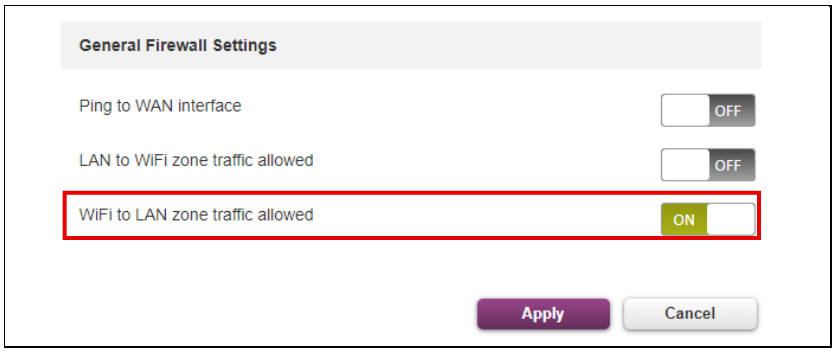


Fig. 56: PlusBox 301, Allowing data traffic from WiFi to LAN

3. On the Firewall configuration page, set up a rule for the **DMZ-to-LAN zone pair** that **allows data traffic to the destination port 80 (HTTP)** of your server:

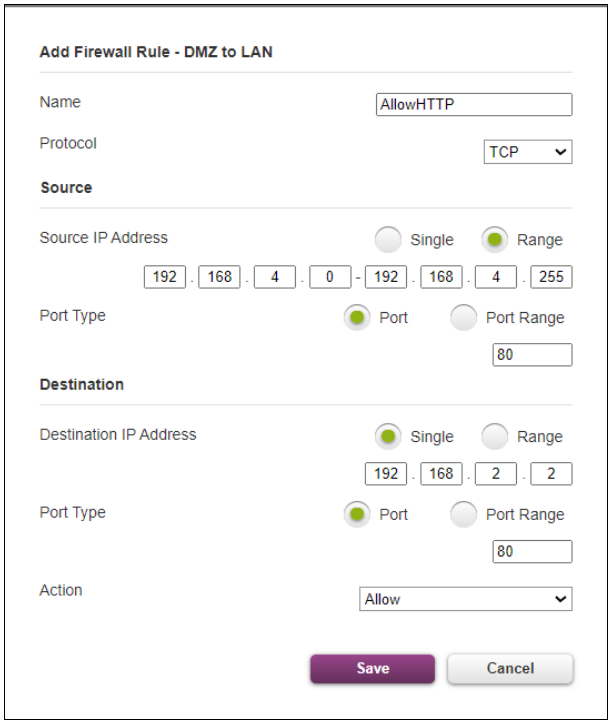


Fig. 57: PlusBox 301, Allowing data traffic from DMZ to LAN for HTTP

NOTE

The steps given here for firewall configuration for a server in the LAN apply analogously to servers in the WiFi network.

9.4 DMZ/Exposed Host default configuration after activation

In the default setting of PlusBox 301, **prior to Exposed Host function activation,** all data traffic between the so-called Demilitarized Zone (**DMZ**) and other subnets/firewall zones is denied on the basis of a correspondingly defined firewall rule.

By setting up an **Exposed Host** (see Section 6.2.4), whose subnet is referred to as a Demilitarized Zone (**DMZ**) due to its free accessibility, computers from the Internet, LAN, WiFi or Guest WiFi networks can be granted secure access to server services in your network. Conversely, you can operate in the DMZ a computer that is to download content from the Internet to prevent any malware from entering your local networks.

ETH 1/0 port of PlusBox 301 is reserved for **DMZ/Exposed Host** functionality. This port is **deactivated by default**. If you activate it and configure the settings of the connected computer accordingly, the previously blocked data traffic from the WAN (Internet), LAN, WiFi and Guest WiFi networks to this computer in the DMZ is initially allowed without any restrictions. You can then define the desired restrictions using firewall rules.

NOTE

DMZ functionality is not available for IP Voice only connections. Accordingly, ETH 1/0 port of PlusBox 301 is deactivated for these connection types.

The default firewall settings of PlusBox 301 for the DMZ are defined as follows when the **Exposed Host** function is activated:

- Internet (WAN) → DMZ: Data traffic allowed without restriction
- DMZ → Internet (WAN): Data traffic denied
- Local networks LAN, WiFi and Guest WiFi → DMZ: Data traffic allowed without restriction
- DMZ → LAN: Data traffic denied

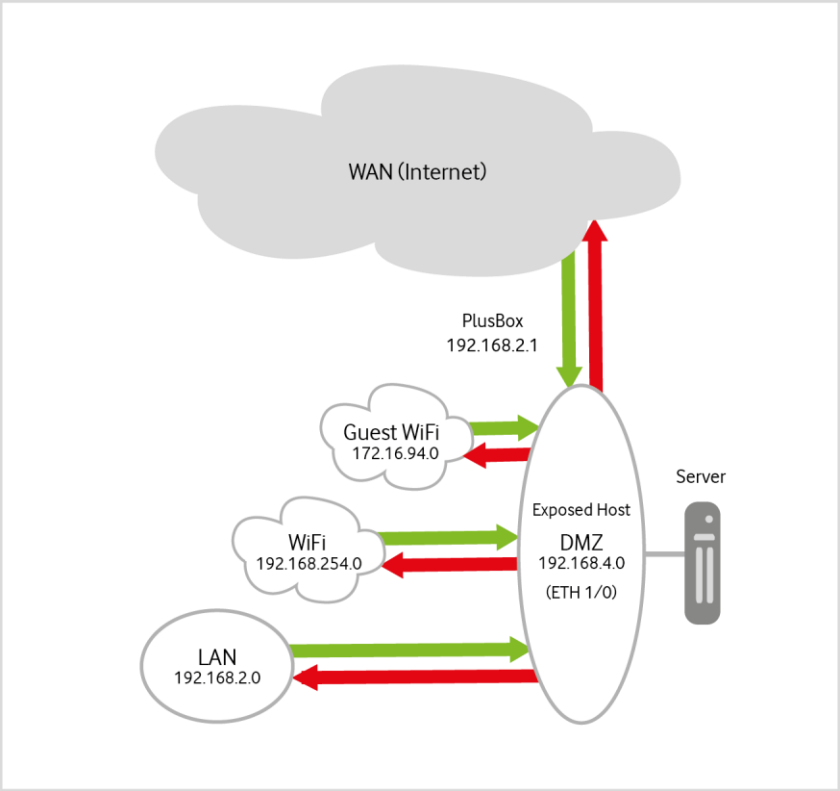


Fig. 58: PlusBox 301, DMZ/Exposed Host default configuration

If you want to set up an Exposed Host in the DMZ, you must **activate** the **Exposed Host** function and, if necessary, restrict the allowed data traffic types between the respective zones and the DMZ using firewall rules.

NOTE

To describe how to configure PlusBox 301 for secure software download from the Internet, Section 9.5 uses the corresponding example of a server in the DMZ.

9.5 Scenario 2: Software download via DMZ host

A server in the DMZ shall be allowed to download software from the Internet (WAN). Computers in the LAN, WiFi and Guest WiFi networks shall be granted access to this DMZ server.

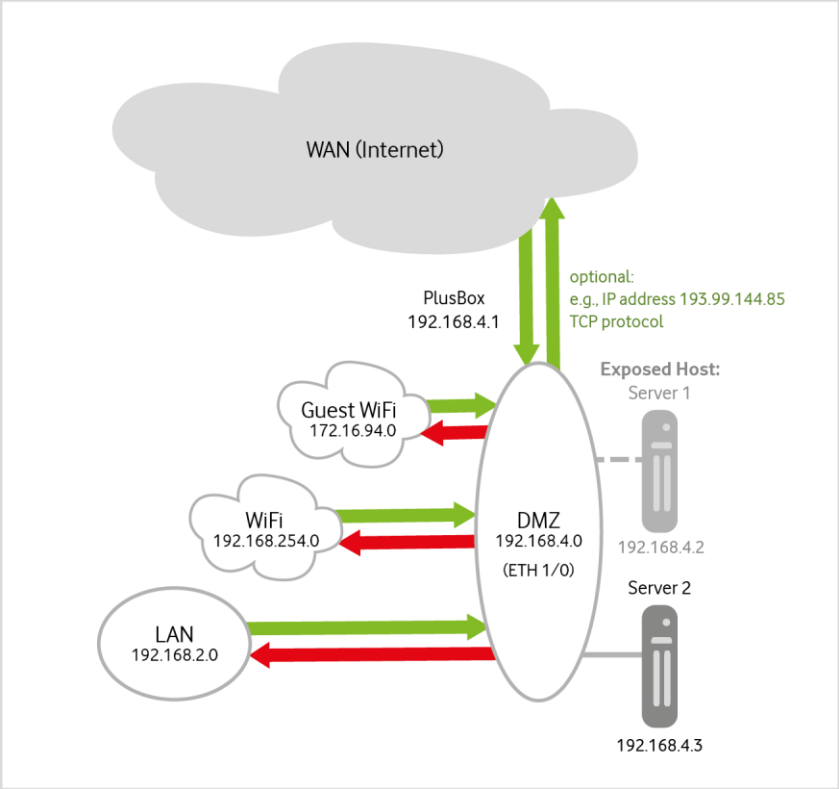


Fig. 59: PlusBox 301, Software download via DMZ host – sample configuration

Proceed as follows to configure the server in the DMZ for software download:

1. Use the slider on the **Exposed Host** content page to activate the corresponding function (see Section 6.2.4) in order to **allow data traffic** from the LAN, WiFi and Guest WiFi networks to the DMZ and from the DMZ to the WAN:

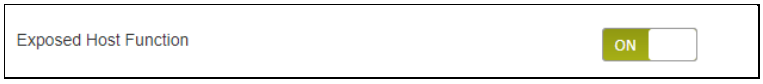


Fig. 60: PlusBox 301, Activating Exposed Host functionality

2. Enter the **IP Addresses** of the **Exposed Host** and **PlusBox** as well as the **IP Subnet Mask** for the DMZ subnet in the pop-up editing window that opens:

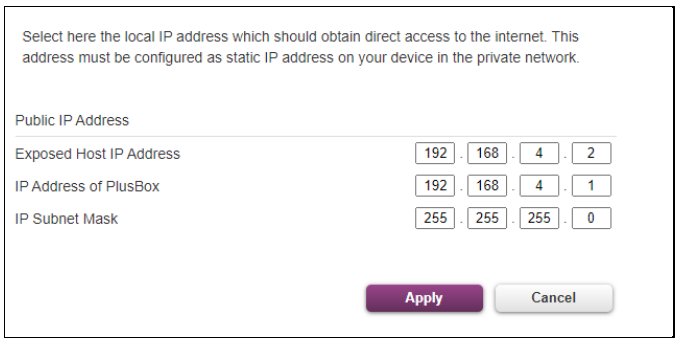


Fig. 61: PlusBox 301, Entering IP addresses for Exposed Host functionality

NOTE

For the coupling network between PlusBox 301 and Exposed Host, you can only enter a unique IP network that is not already used for your LAN, WiFi or Guest WiFi networks.

3. On the Firewall configuration page for the server in the DMZ, add a rule for the **DMZ-to-WAN zone pair** (without restriction) (see Fig. 62), **or**
4. On the firewall configuration page for the server in the DMZ, set up a rule for the **DMZ-to-WAN zone pair** only **for a specific server** on the Internet (optional in the sample configuration: a server for software download at www.heise.de, accesible via its IP address 193.99.144.85) and only for the **TCP protocol** (see Fig. 63).

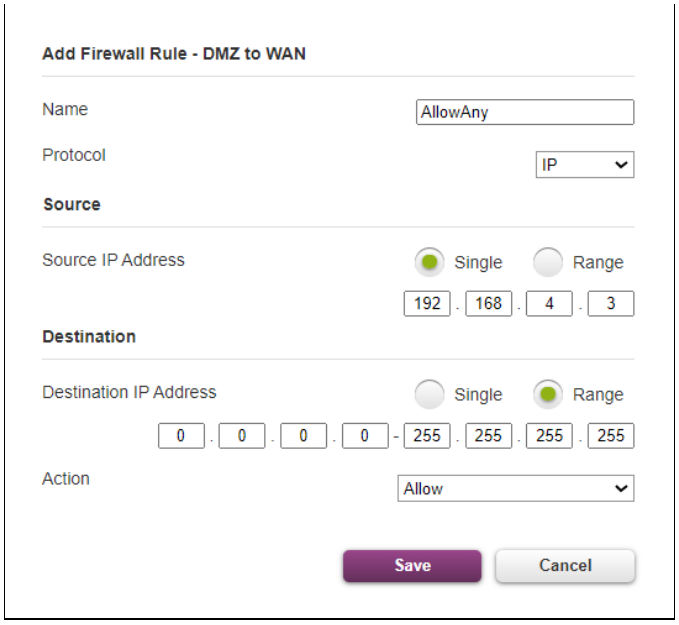


Fig. 62: PlusBox 301, Allowing IP data traffic from DMZ to WAN

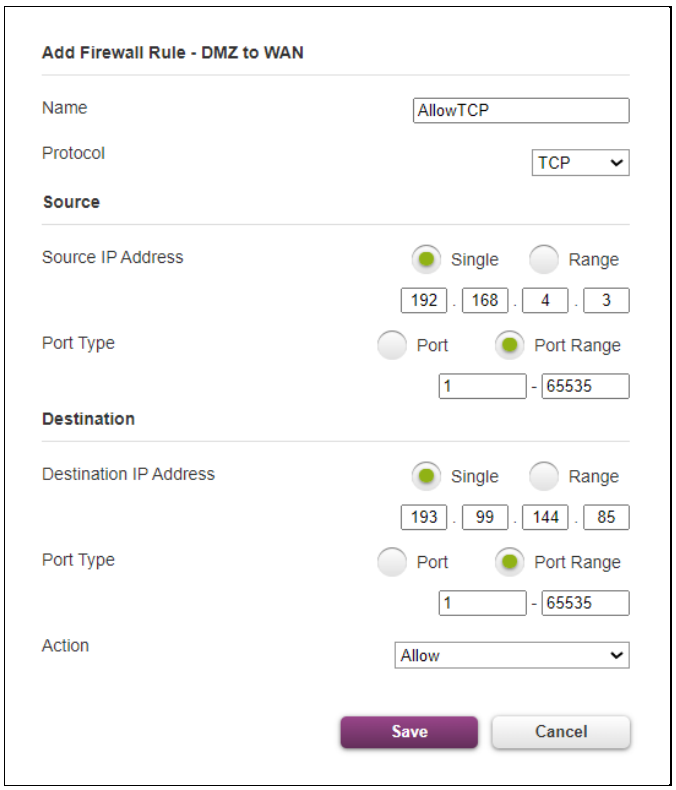


Fig. 63: PlusBox 301, Allowing TCP data traffic from DMZ to WAN for specific WAN server

9.6 Scenario 3: DMZ host uses Internet NTP server

A server in the DMZ (this may or may not be an Exposed Host) shall be allowed to access an NTP server on the Internet. The computers from the LAN, WiFi and Guest WiFi network shall be granted access to the DMZ server.

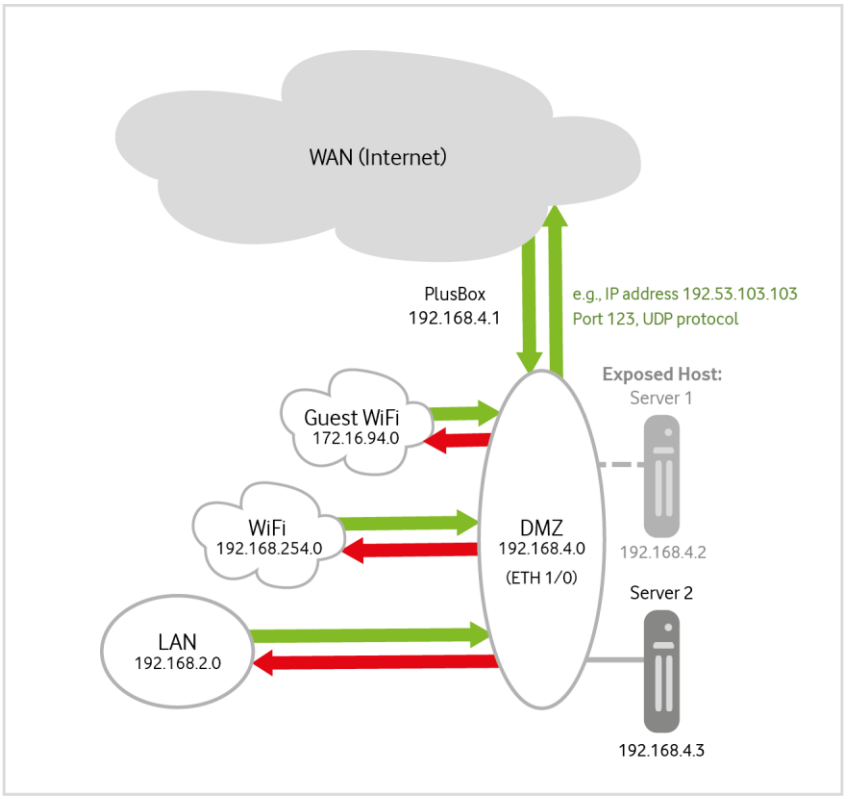


Fig. 64: PlusBox 301, DMZ computer uses Internet NTP server – sample configuration

Proceed as follows to configure the access options mentioned:

1. Activate the Exposed Host function and enter the IP addresses and the IP subnet mask for the DMZ subnet as described in steps 1 and 2 of the scenario in Section 9.5.
2. On the Firewall configuration page for the server in the DMZ, add a rule for the **DMZ-to-WAN zone pair** for an **NTP server** on the Internet (in the sample configuration: NTP server of Physikalisch-Technische Bundesanstalt Braunschweig, with IP address 192.53.103.103), entering **Port 123** for **NTP** and the **UDP Protocol**:

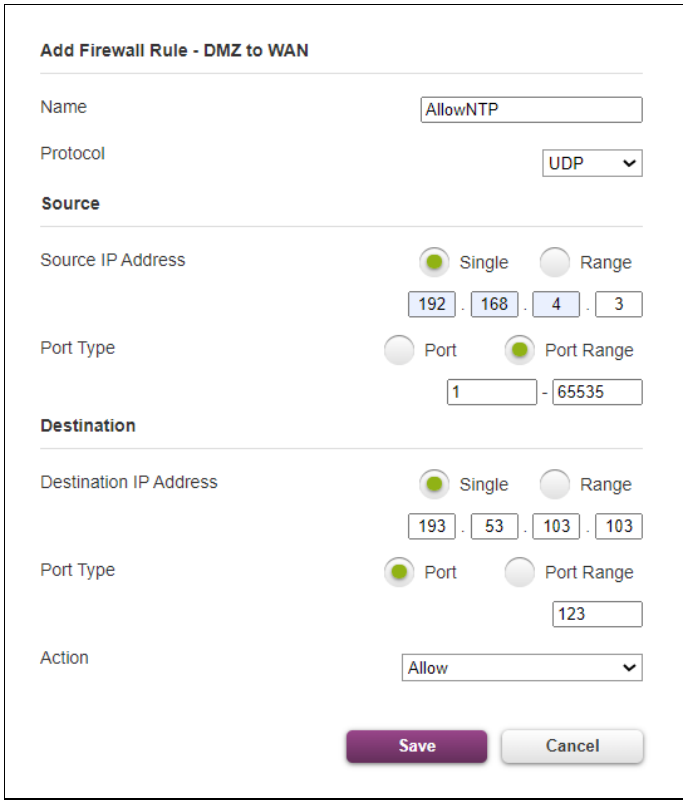


Fig. 65: PlusBox 301, Enabling data traffic from DMZ to WAN for specific NTP server

9.7 Scenario 4: Web server in the DMZ

In this scenario, a **web server** is provided in the DMZ **as** an **Exposed Host** whose server services can be accessed by computers from the Internet. In contrast, only computers from the LAN are granted access to a download server also provided in the DMZ .

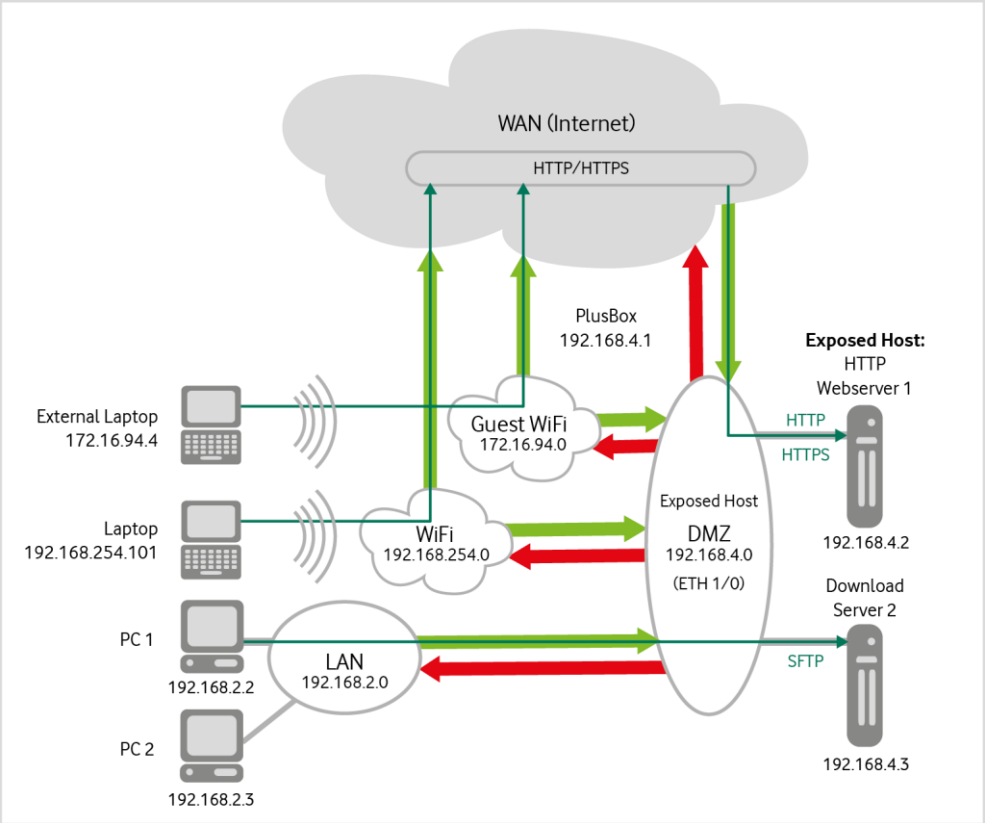


Fig. 66: PlusBox 301, Sample configuration web server in DMZ

NOTE

When configuring the servers in the DMZ, note the **difference** between an **Exposed Host** that is freely accessible from the Internet and a **non-exposed DMZ server** (see explanation in Section 6.2.4).

Proceed as follows to configure access from the Internet (WAN) to the web server in the DMZ:

1. Activate the Exposed Host function and enter IP addresses for the web server that is to act as the Exposed Host (192.168.4.2) as well as for PlusBox 301 and for the subnet mask for the DMZ subnet – see description in steps 1 and 2 of the scenario in Section 9.5.
2. **Configure** the **web server in the DMZ** that acts as an Exposed Host so that it allows **HTTP and HTTPS traffic from the Internet only**. Further information on server settings can be found in its manufacturer documentation.
3. **Configure** the **download server in the DMZ** so that it allows **SFTP data traffic from the LAN only**. Further information on server settings can be found in its manufacturer documentation.

9.8 Scenario 5: VPN router in the LAN

- The connected PCs can communicate in the company LAN that uses the local subnet IP 192.168.30.0. Access to the VPN within the cloud is tunneled via an encrypted connection.
- This VPN connection is established by the router via a second local subnet 192.168.2.0. The firewall rules for the encrypted connection and for remote maintenance on the VPN router are defined via PlusBox 301, which is located in this subnet.

NOTE

Due to lack of space, in the following illustration, the IP addresses, ports and the respective transport protocol of the target servers are shown in abbreviated form compared to the other illustrations.

The dashed line from the router to the cloud and to the data centre where the available services are located represents an encrypted data flow within a VPN tunnel.

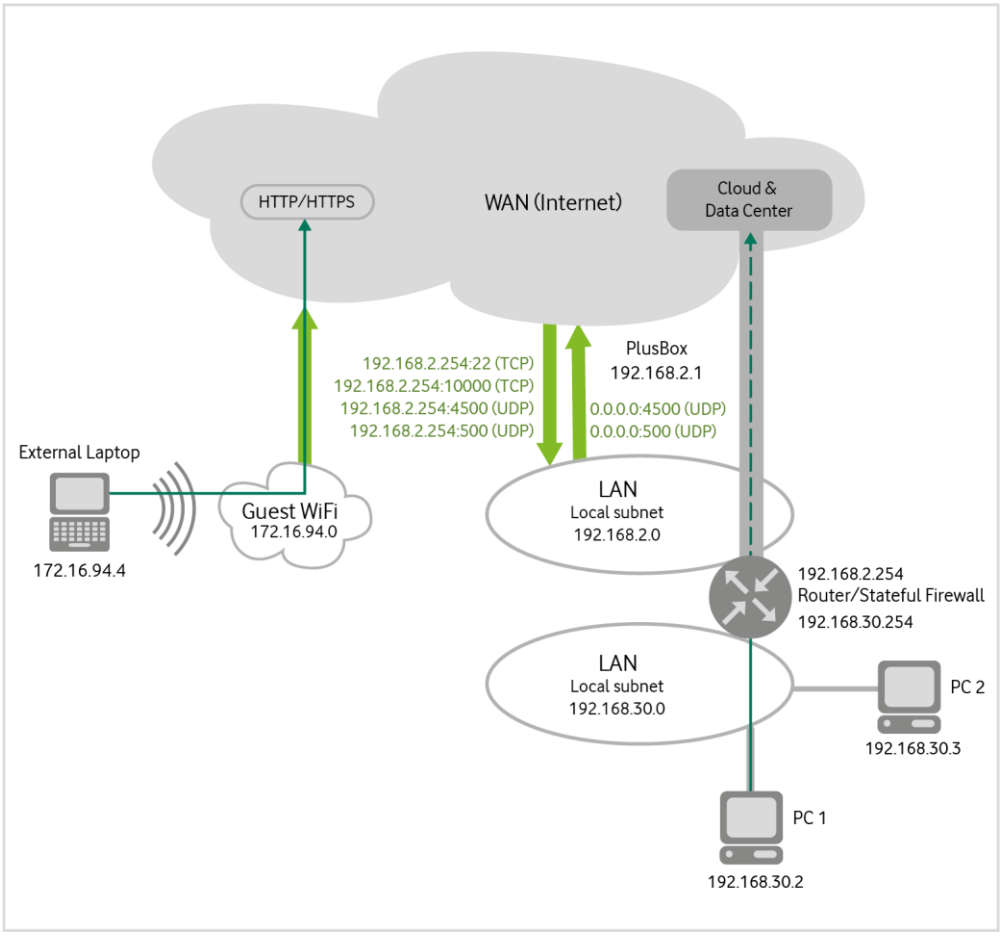


Fig. 67: PlusBox 301, Sample configuration VPN router in the LAN

Proceed as follows to configure the rules for the VPN connection:

1. For remote maintenance of the VPN router (see Section 6.2.3), add a **Port Mapping** from WAN to LAN for the IP address of the VPN router in the LAN (192.168.2.254) and fill in **the destination port number 22 (SSH)**:

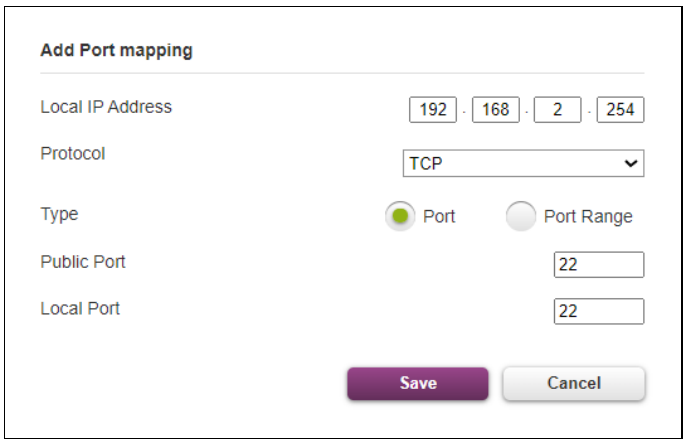


Fig. 68: PlusBox 301, Port Mapping from WAN to LAN for SSH

2. On the Firewall configuration page (see Section 6.2.2), add a rule for the for the encrypted connection for **LAN-to-WAN zone pair IPSec data traffic transported via TCP**:

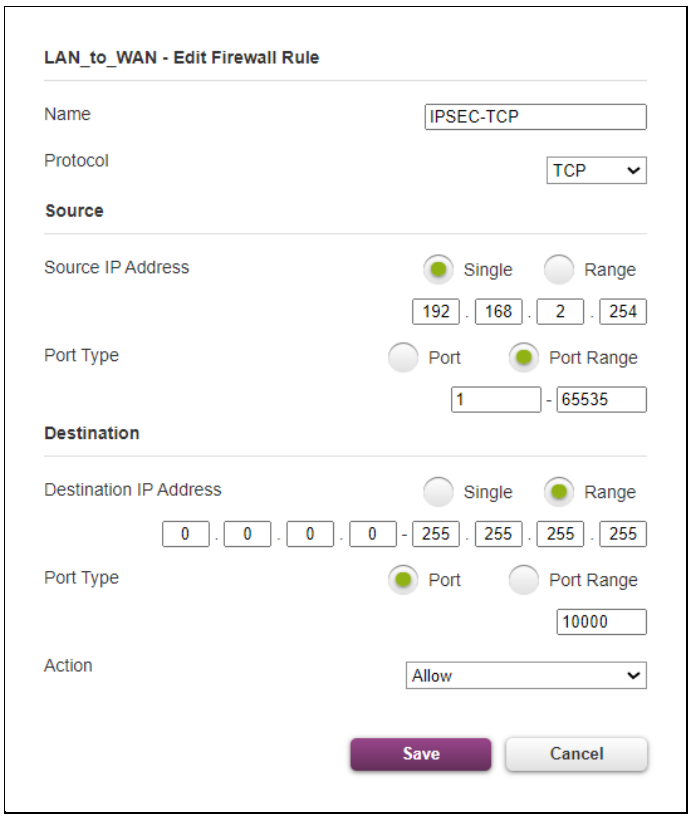


Fig. 69: PlusBox 301, Allowing IPSec TCP traffic from LAN to WAN

NOTE

In the sample configuration, the router also works as a **stateful firewall**, which is why the return path for the configured data traffic type is implicitly free. If you are using an older type of firewall, you may need to explicitly set up the return path from the WAN to the LAN, defining an additional firewall rule.

3. On the Firewall configuration page (see Section 6.2.2), add a rule for the for the encrypted connection for **LAN-to-WAN zone pair IPSec data traffic transported via UDP**:

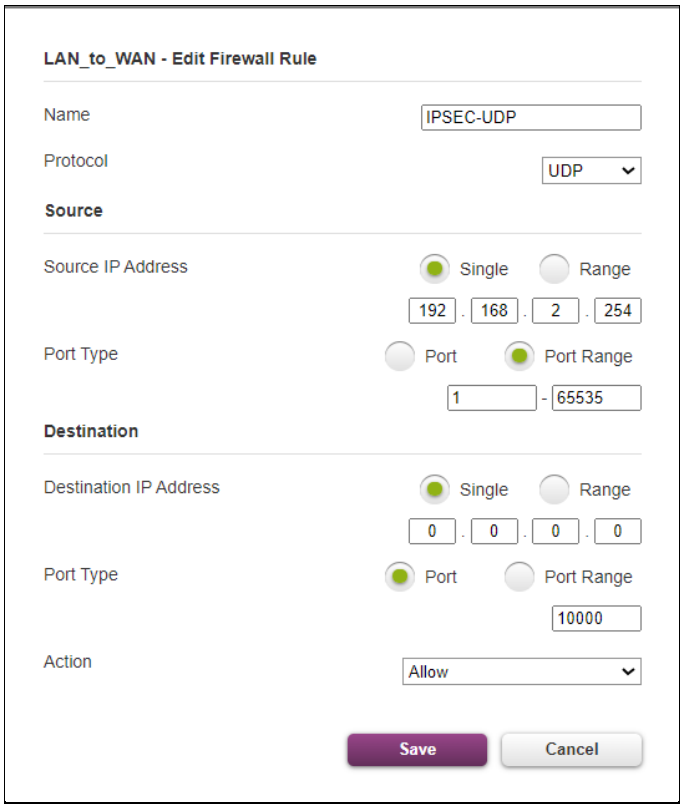


Fig. 70: PlusBox 301, Allowing IPSec UDP data traffic from LAN to WAN

4. Add a rule for the return path of the encrypted connection for **IPSec data traffic transported via UDP**, i.e. for the **WAN-to-LAN zone pair**:

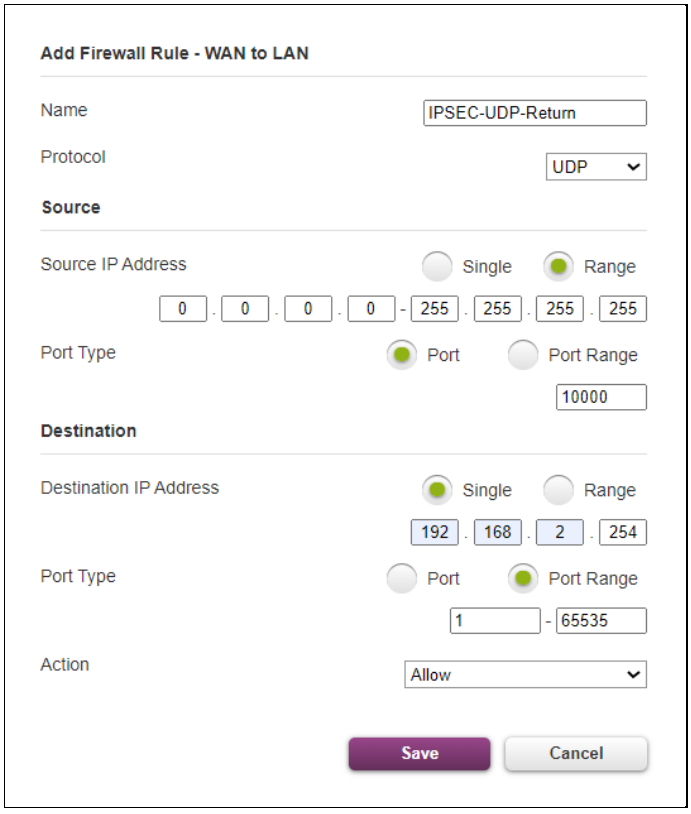


Fig. 71: PlusBox 301, Enabling IPSec UDP traffic from WAN to LAN

5. **DenyAny** other type of data traffic from the LAN to the WAN:

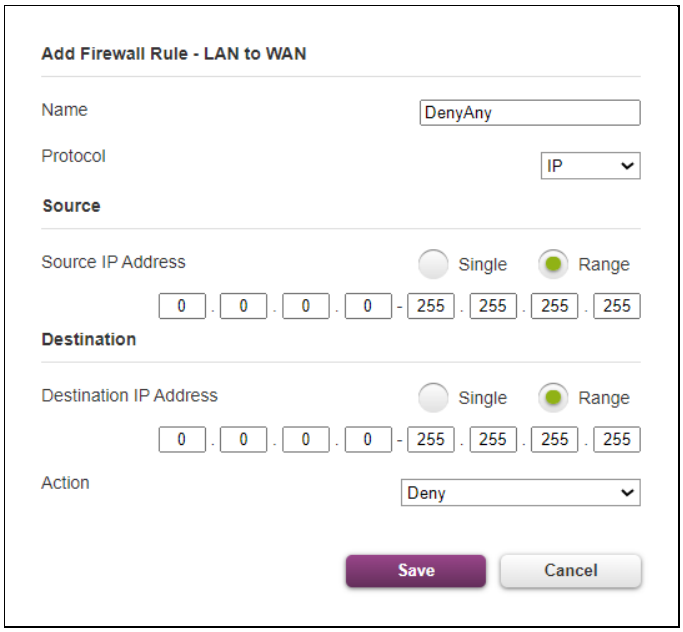


Fig. 72: PlusBox 301, Denying any other data traffic from LAN to WAN

6. Check the priority of the individual firewall rules (highest priority at the top) and change the order using the (move up) button if necessary:
   - **IPSec rules** at the top
   - Followed by the rule for **any other data traffic** to be **denied**
   - Finally, the **default rule** preconfigured on PlusBox 301

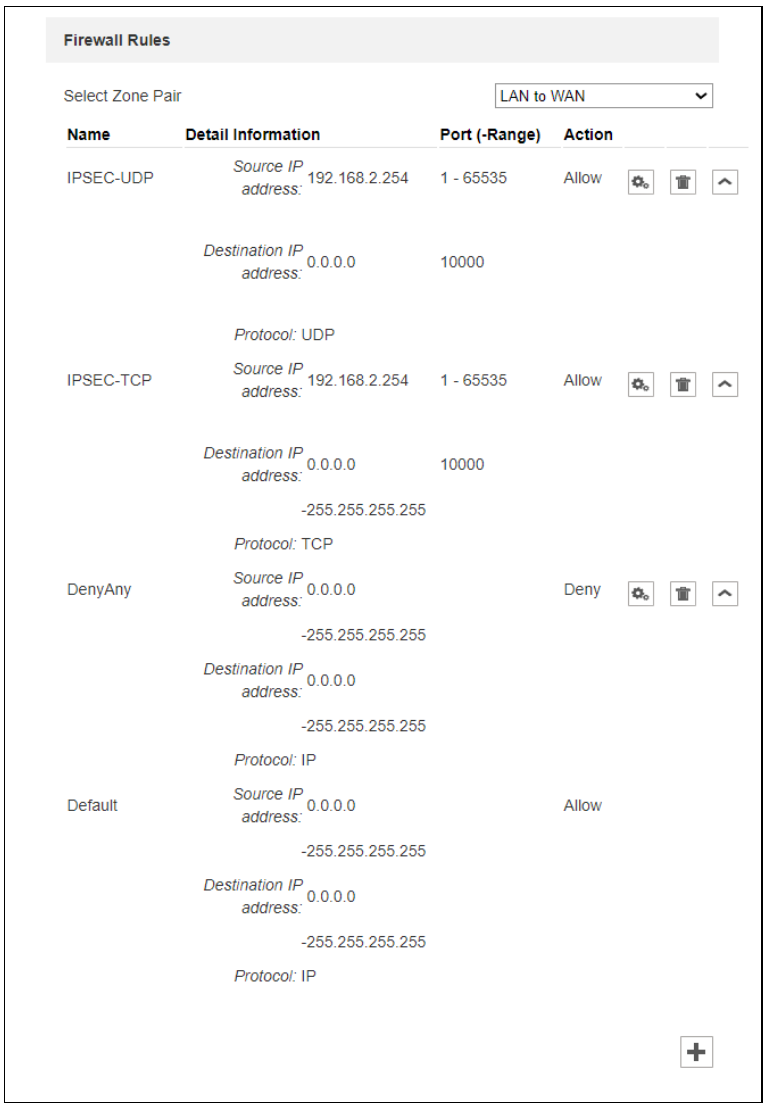


Fig. 73: PlusBox 301, Firewall rules with descending priority order

10 Glossary

Term/abbreviation	Explanation
Browser	Programme that invokes and displays web pages on the → WWW
Captcha	**C**ompletely **A**utomated **P**ublic **T**uring test to tell **C**omputers and **H**umans **A**part: automatically generated pattern that a user must enter after filling out a browser-based form. This serves to ensure that a human user and not a robot has made the entries, as humans are much better at recognising patterns.
DMZ	**De**militarized **Z**one: zone within a network security concept which, in contrast to the other protected → firewall zones, is freely accessible for data traffic
DNS	**D**omain **N**ame **S**ystem: directory service that establishes the mapping between → host names (e.g. www.customer.com) and → IP addresses (e.g. 192.168.0.1)
Domain (Domain)	Coherent part of the → DNS. For example, the host names www.customer.com and test. customer.com are located in the domain customer.com.
Download	Transferring files from a → server
DSL	**D**igital **S**ubscriber **L**ine: fast digital Internet access via telephony copper cable
Ethernet	Technology that specifies → protocols and hardware for data networks connected via network cables
Exposed Host	Computer in the → DMZ that is explicitly accessible for network traffic from zones for which it should not be accessible according to the defined → firewall rules
Firewall	Security system that protects a computer network from unwanted network access
Host name	Alphanumeric name of a computer in an → IP network, e.g. www.customer.com
HTTP	**H**yper**t**ext **T**ransfer **P**rotocol: → protocol for exchanging HTML documents on the → WWW
HTTPS	**H**yper**t**ext **T**ransfer **P**rotocol **S**ecure: secure variant of → HTTP in which data are transmitted in encrypted form. This is achieved through a combination of → HTTP and → SLL.
ICMP	**I**nternet **C**ontrol **M**essage **P**rotocol: Internet protocol for the exchange of information and error messages via → IP
IP	**I**nternet **P**rotocol: → protocol used to transmit data packets in local networks and on the Internet
IP address	Unique numerical address of each subscriber in an → IP network. In IP version 4, IP addresses consist of four numbers between 0 and 255, separated by dots, e.g. 134.195.12.17.
Jumphost	Interposed → server that routes data traffic through firewalls using a secure channel
LAN	**L**ocal **A**rea **N**etwork: local computer network
MAC address	**M**edia **A**ccess **C**ontrol address: globally unique hardware address of a network component (also: physical address, Ethernet ID)
MIC	**M**odem **I**nstallation **C**ode: code for automatic installation of your PlusBox 301, which you will receive in the welcome letter
Port (IP)	Number that specifies the requested service on the addressed destination computer (e.g. port 80 for HTTP)
Port (hardware)	Connection socket of a network component (e.g. a computer or a router)

Term/abbreviation	Explanation
Protocol	Exact agreement on how data is exchanged between two or more computers or programmes
Router	Network coupling element for connecting and/or networking identical or different local networks (→ LAN)
SCTP	**S**tream **C**ontrol **T**ransmission **P**rotocol: reliable connection-oriented → protocol used to transport telephony signalling data via (connection-less) → IP networks
Server (Software)	Programme that provides services that can be used by another → client programme
Server (Hardware)	Computer on which one or more server programmes are running
SSL	**S**ecure **S**ockets **L**ayer: encryption protocol for secure data transmission on the Internet
Stateful Firewall	→ Firewall that monitors the connection status of network traffic and allows only those data packets to pass whose characteristics match a known active network connection
TCP	**T**ransmission **C**ontrol **P**rotocol: → protocol that is based on the Internet Protocol (→ IP) and enables data to be exchanged between two computers or programmes
UDP	**U**ser **D**atagram **P**rotocol: Minimum connectionless → protocol with which data is transmitted via → IP networks to the → port for the desired service on the destination computer
Upload	Transferring files to a → server
VLAN	**V**irtual → **LAN**: configuration used for logical segmentation of a local network. Direct communication between stations in different VLANs is not possible.
Voice LAN	Separate → LAN for Voice functions which is created in the network configuration of PlusBox (for IP Voice + Data connections only)
WAN	**W**ide **A**rea **N**etwork. Computer network that extends over a large geo-graphical area, e.g. over countries or continents (in contrast to a → LAN)
WiFi	**Wi**reless **Fi**delity: standard for local wireless networks
WPS	**W**iFi **P**rotected **S**etup: Standard for setting up an encrypted → WiFi
WWW	**W**orld **W**ide **W**eb: The WWW enables access to digitally stored documents that are offered by → web servers on the Internet. Access is established via a → browser.

11 Index

A

About submenu 57
Account (Activation wizard page) 26
activate
  data traffic from LAN to WiFi 32
  data traffic from WiFi to LAN 32
  Exposed Host 34
  MAC-Filter 40
  Ping to WAN interface 32
  WiFi 36
  WPS 37
activation
  failed 59
  PlusBox 22
Activation (Activation wizard page) 23
Activation wizard
  Account page 26
  Activation page 23
  Setup page 24
Add entry (button) 18
Advanced Settings
  content page 41
  submenu 41
Anlagen-Anschluss Plus 8
Annex-B ..... *see* DSL mode
Annex-J ..... *see* DSLmode
answering machine 9, 11
Aux LED 13

B

bitrate 53
button
  Add entry 18
  Delete entry 18
  Edit settings 18
  Reconnection 29
  Reset 51
  Restart 51
button (control element) 15

C

Captcha 58
checkbox (control element) 17
complex configuration page (page type) 17
configuration
  backup file 43
  PlusBox ~ file 44, 51
  restore 24
Configuration
  content page 44
  submenu 43
configuration computer 12
configuration page, complex (page type) 15
configuration page, simple (page type) 15
configure PlusBox for Internet access 28
connection type
  IP Voice + Data 10, 55
  IP Voice only 8, 55
content page
  Advanced Settings 41
  Configuration 44
  Diagnostic program 56
  DSL 29
  Exposed Host 35
  Firewall 30
  Firmware Update 43
  General WiFi Settings 36
  LAN Network 46
  MAC Filter 40
  PlusBox Password 42
  PlusBox Reset & Reboot 52
  PlusBox Status 53
  Port Mapping 33
  Voice LAN Network 49
  WPS 38
content window 14
control element
  button 15
  checkbox 17
  default button 16, 17
  function button 16, 17
  list field 16, 17
  list field for mode selection 15
  menu bar 14
  PlusBox status bar 15
  radio button 18
  slider 17
  text field 17
control element (user interface) 18
credentials for PlusBox 42
customer service 60

D

data traffic from LAN to WiFi
  activate 32
  deactivate 32
data traffic from WiFi to LAN
  activate 32
  deactivate 32
deactivate
  data traffic from LAN to WiFi 32
  data traffic from WiFi to LAN 32
  Ping to WAN interface 32
default button (control element) 16, 17
Default mode (user interface) 15
Delete entry (button) 18
delivery scope 6

DHCP
server 47, 48, 50
settings 47, 50
status 54
DHCP server 53
Diagnostic program
content page 56
submenu 56
display language (user interface) 15
DMZ (Demilitarized Zone) 11, 31
DSL
content page 29
LED 13
mode 53
port 9, 11
status 29
submenu 29

E

Edit settings (button) 18
error messages 58
ETH (port) 21
Ethernet port status 54
Expert mode (user interface) 15
Exposed Host 9, 11
activate 34
content page 35
IP address 34
set up 34
submenu 34

F

factory settings 51
fax 9, 11
firewall
rule 30
settings 32
Firewall
content page 30
submenu 30
firmware 55
update 43
version 15, 43
Firmware Update
content page 43
submenu 43
function button (control element) 16, 17

G

gateway 53
General WiFi Settings
content page 36
submenu 36
Guest WiFi 35, 46

I

ICMP (protocol) 32
intended use 6
Internet (main menu) 29
IP (protocol) 32
IP address
Exposed Host 34
network device 28
PlusBox 22, 35
pool 48, 50, 53
IP LED 12
IP mode 8
IP PBX 8, 9, 11
IP Voice + Data connection 10, 55
IP Voice only connection 8, 55

J

Jumphost 64

L

LAN 46
settings 47
status 28
LAN Network
content page 46
submenu 46, 47
LED 12
Aux 13
DSL 13
IP 12
Status 12
WiFi 13
WPS 13
licence information 57
light indicator ..... *see* LED (Light-Emitting Diode)
Light-Emitting Diode ..... *see* LED
link status 53
list field (control element) 16, 17
list field for mode selection (control element) 15

M

MAC address 40, 53
MAC Filter
content page 40
submenu 39
MAC-Filter, activate 40
main menu
Internet 29
Settings 42
Status & Help 52
WiFi 35
Main WiFi 35
menu bar (control element) 14
MIC (Modem Installation Code) 23
incomplete 58
invalid 58
mode
Default 15
DSL 53
Expert 15
Modem Installation Code ..... *see* MIC

N

navigation bar (control element) 14
network
  Guest WiFi 46
  LAN 46
  status 29
  Voice LAN 46
  WiFi 46
network type 28

O

Overview page 20, 28

P

page type
  complex configuration page 17
  configuration page, complex 15
  configuration page, simple 15
  simple configuration page 16
  status overview page 15
page, Overview 28
password
  backup file ~ 44
  invalid 58
  PlusBox 22
  WiFi 26, 37
PBX 8
PBX, IP 8, 9, 11
PC 11
Ping 31, 56
Ping to WAN interface
  activate 32
  deactivate 32
PlusBox
  activate 22
  activation failed 59
  backup file 43
  configuration file 44, 51
  configure for Internet access 28
  connect 8
  credentials 22, 42
  factory settings 51
  functions 19
  IP address 22, 35
  LEDs 12
  MAC address 53
  password 22
  reset 51
  restart 51
  set ~ up for Voice service 21
  user interface 14
  username 22
PlusBox Password
  content page 42
  submenu 42
PlusBox Reset & Reboot
  content page 52
  submenu 51
PlusBox status bar (control element) 15
PlusBox Status content page 53
PlusBox Status submenu 52
port
  DSL 9, 11
  ETH 21
  local 33
  public 33
  range 32, 33
  type 32
Port Mapping
  add 33
  content page 33
  edit 33
  submenu 32
prerequisites 5
Private Branch Exchange ..... *see* PBX
protocol 31
  ICMP 32
  IP 32
  SCTP 32
  TCP 32, 33
  UDP 32, 33

R

radio button (control element) 18
Reconnection (button) 29
reset PlusBox 51
restart PlusBox 51

S

safety notes 6, 60
scope of delivery 6
SCTP (protocol) 32
security settings 61
server 11
  DHCP 47, 50
set up
  configuration computer 21
  PlusBox for Internet access 28
  PlusBox for Voice service 21
settings
  DHCP 47
  LAN 47
  security 61
  WiFi 25, 36
Settings main menu 42
Setup (Activation wizard page) 24
simple configuration page (page type) 16
slider (control element) 17
SSID ..... *see* WiFi name
status
  DHCP 54
  DSL 29, 52
  Ethernet port 52, 54
  firewall 53
  Guest WiFi 52
  Internet 52
  LAN 28
  LAN Network 52
  Main WiFi 52
  network 29
  PlusBox 53

system 52
telephony 52
WAN 28
WiFi 28, 54
Status & Help main menu 52
Status (LED) 12
status display (user interface) 14
status overview page (page type) 15
submenu
About 57
Advanced Settings 41
Configuration 43
Diagnostic program 56
DSL 29
Exposed Host 34
Firewall 30
Firmware Update 43
General WiFi Settings 36
LAN Network 46, 47
MAC filter 39
PlusBox Password 42
PlusBox Reset & Reboot 51
PlusBox Status 52
Port Mapping 32
Telephony, ISDN interfaces, Voice LAN Network 55
Voice LAN Network 48
WiFi and Guest WiFi 50
WPS 37
subnet mask 35
switch 11

T

TAE socket 9, 11, 23
TCP (protocol) 32, 33
telephone 9, 11
telephone socket ..... *see* TAE socket
Telephony, ISDN interfaces, Voice LAN Network
submenu 55
text field (control element) 17
Troubleshooting 58

U

UDP (protocol) 32, 33
update firmware 43
use, intended 6
user interface 14
configuration page is not displayed 59
control element 15, 18
display language 15
navigation 14
page structure 14
page type 15
WiFi connection to ~ failed 59
user status bar (control element) 14
username
invalid 58
PlusBox 22

V

VLAN ID 10, 11
Voice LAN 10, 46
auto configuration 10, 49
VLAN configuration 10, 50
Voice LAN Network
content page 49
submenu 48
Voice service 8
VoiceManager Portal 8

W

WAN status 28
welcome letter 23
WiFi 46
activate 36
band selection 26
channel 41
device 38
encryption 29, 36, 54
Guest ~ 35
hotspot 39
LED 13
MAC address 54
Main ~ 35
main menu 35
mode 41
name (SSID) 26, 36, 54
password 26, 37
protection mode 26, 36
settings 25, 36
status 28, 54
transmission power 41
WiFi and Guest WiFi submenu 50
WiFi network
settings 25
switch on 25
WiFi-Protected Setup ..... *see* WPS
WPA2 PSK ..... *see* WiFi
WPS 37
content page 38
LED 13
PIN 38
Push procedure 37
REG procedure 38
submenu 37
writing conventions 5

Z

zone for data traffic (firewall setting) 31

12 List of figures

Fig. 1: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice only – Overview 9
Fig. 2: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice only – Detail 9
Fig. 3: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice + Data – Overview ... 10
Fig. 4: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice + Data – Auto configuration detail 10
Fig. 5: Anlagen-Anschluss Plus, Connecting hardware with PlusBox 301, IP Voice + Data – VLAN config. detail 11
Fig. 6: PlusBox 301 front view (detail) 12
Fig. 7: PlusBox 301, Structure of pages in the user interface 14
Fig. 8: PlusBox 301, Page types: Example of a status overview page 15
Fig. 9: PlusBox 301, Page types: Example of a simple configuration page 16
Fig. 10: PlusBox 301, Page types: Example of a complex configuration page 17
Fig. 11: PlusBox 301, Page types: Example of a complex pop-up editing window 18
Fig. 12: PlusBox 301, Enter username and password 22
Fig. 13: PlusBox 301, Activation wizard, Step 1: Activation 23
Fig. 14: PlusBox 301, Activation wizard, MIC input 23
Fig. 15: PlusBox 301, Activation successful 24
Fig. 16: PlusBox 301, Activation wizard, Step 2: Setup 24
Fig. 17: PlusBox 301, Activation wizard, Setting up the WiFi network 25
Fig. 18: PlusBox 301, Activation wizard, Defining WiFi settings 25
Fig. 19: PlusBox 301, Activation wizard, Changing password for WiFi network 26
Fig. 20: PlusBox 301, Activation wizard, Step 3: Account 26
Fig. 21: PlusBox 301, Activation wizard, Account set-up completed 27
Fig. 22: PlusBox 301, Overview page (example for IP Voice + Data connection) 28
Fig. 23: PlusBox 301, DSL content page 29
Fig. 24: PlusBox 301, Firewall content page 30
Fig. 25 : PlusBox 301, Pop-up editing window for firewall rules 31
Fig. 26: PlusBox 301, Port Mapping content page 33
Fig. 27: PlusBox 301, Pop-up editing window for Port Mapping 34
Fig. 28: PlusBox 301, Exposed Host content page 35
Fig. 29: PlusBox 301, General WiFi Settings content page 36
Fig. 30: PlusBox 301, Setting new password for WiFi network 37
Fig. 31: PlusBox 301, WPS content page, Automatically connecting WiFi device via WPS Push 38
Fig. 32: PlusBox 301, WPS content page, Connecting WiFi device via WPS-REG (PIN) 39
Fig. 33: PlusBox 301, MAC Filter content page 40
Fig. 34: PlusBox 301, Advanced Settings content page 41
Fig. 35: PlusBox 301, PlusBox Password content page 42
Fig. 36: PlusBox 301, Firmware Update content page 43
Fig. 37: PlusBox 301, Configuration content page 44
Fig. 38: PlusBox 301, Saving configuration to computer 44
Fig. 39: PlusBox 301, Loading configuration file from PlusBox 45
Fig. 40: PlusBox 301, LAN Network content page, before DHCP activation 46
Fig. 41: PlusBox 301, LAN Network content page (IP Voice + Data) 47
Fig. 42: PlusBox 301, Voice LAN Network content page, ETH 0/3 configuration (IP Voice + Data) 49
Fig. 43 : PlusBox 301, Voice LAN Network content page, VLAN configuration (IP Voice + Data) 50

Fig. 44: PlusBox 301, PlusBox Reset & Reboot content page 52
Fig. 45: PlusBox 301, PlusBox Status content page, Internet and DSL 53
Fig. 46: PlusBox 301, PlusBox Status content page, LAN Network and Ethernet Ports content page 54
Fig. 47: PlusBox 301, PlusBox Status content page, Main WiFi and Guest WiFi 54
Fig. 48: PlusBox 301, PlusBox Status content page, System 55
Fig. 49: PlusBox 301, Telephony status content area (IP Voice only) 55
Fig. 50: PlusBox 301, Status content page, Voice LAN Network (IP Voice + Data) 56
Fig. 51: PlusBox 301, Diagnostic program content page 56
Fig. 52: PlusBox 301, Default firewall configuration for LAN (IP Voice + Data) 62
Fig. 53: PlusBox 301, Default firewall configuration for Voice LAN (IP Voice + Data) 63
Fig. 54: PlusBox 301, HTTP server in the LAN – sample configuration 64
Fig. 55: PlusBox 301, Port Mapping from WAN to LAN for HTTP 64
Fig. 56: PlusBox 301, Allowing data traffic from WiFi to LAN 65
Fig. 57: PlusBox 301, Allowing data traffic from DMZ to LAN for HTTP 65
Fig. 58: PlusBox 301, DMZ/Exposed Host default configuration 66
Fig. 59: PlusBox 301, Software download via DMZ host – sample configuration 67
Fig. 60: PlusBox 301, Activating Exposed Host functionality 67
Fig. 61: PlusBox 301, Entering IP addresses for Exposed Host functionality 68
Fig. 62: PlusBox 301, Allowing IP data traffic from DMZ to WAN 68
Fig. 63: PlusBox 301, Allowing TCP data traffic from DMZ to WAN for specific WAN server 69
Fig. 64: PlusBox 301, DMZ computer uses Internet NTP server – sample configuration 69
Fig. 65: PlusBox 301, Enabling data traffic from DMZ to WAN for specific NTP server 70
Fig. 66: PlusBox 301, Sample configuration web server in DMZ 71
Fig. 67: PlusBox 301, Sample configuration VPN router in the LAN 72
Fig. 68: PlusBox 301, Port Mapping from WAN to LAN for SSH 73
Fig. 69: PlusBox 301, Allowing IPSec TCP traffic from LAN to WAN 73
Fig. 70: PlusBox 301, Allowing IPSec UDP data traffic from LAN to WAN 74
Fig. 71: PlusBox 301, Enabling IPSec UDP traffic from WAN to LAN 74
Fig. 72: PlusBox 301, Denying any other data traffic from LAN to WAN 75
Fig. 73: PlusBox 301, Firewall rules with descending priority order 76

13 List of tables

Tab. 1: LEDs on the front of PlusBox 301 13
Tab. 2: PlusBox 301, Control elements of a menu page 15
Tab. 3: PlusBox 301, Control elements of a simple configuration page 16
Tab. 4: PlusBox 301, Control elements of a complex configuration page 17
Tab. 5: PlusBox 301, Additional control elements in the user interface 18
Tab. 6 : PlusBox 301 functions 19
Tab. 7: Network settings for configuration computer 21