Optical network terminals

NTU-RG-55xx

User manual
Firmware version 3.4.2

IP address: 192.168.1.1

Username: admin

Password: kW5i_1bYC6os

Contents

1 Introduction

A GPON is a network of passive optical networks (PON) type. It is one of the most effective state-of-the-art solutions of the last mile issue that enables cable economy and provides information transfer downlink rate up to 2.5 Gbps and uplink rate up to 1.25 Gbps. Being used in access networks, GPON-based solutions allow end users to have access to new services based on IP protocol in addition to more common ones.

The key GPON advantage is the use of one optical line terminal (OLT) for multiple optical network terminals (ONT). OLT converts Gigabit Ethernet and GPON interfaces and is used to connect a PON network with data communication networks of a higher level. ONT device is designed to connect user terminal equipment to broadband access services. It can be used in residential areas and office buildings.

The range of ONT NTU equipment produced by ELTEX comprises of terminals with four UNI interfaces of 10/100/1000Base-T and supports for FXS [1] , Wi-Fi, USB:

- NTU-RG-5520G-Wax, NTU-RG-5521G-Wax.

This user manual describes intended use, main specifications, configuration, monitoring, and firmware update for NTU-RG optical terminals.

Notes and warnings

Hints contain important information or recommendations on device operation and setup.

Notes contain additional information on device operation or setup.

Warnings inform users about hazardous conditions which may cause injuries or device damage and may lead to the device malfunctioning or data loss.

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[1] For NTU-RG-5521G-Wax.

2 Product Description

2.1 Purpose

NTU-RG GPON ONT (Gigabit Passive Optical Network) devices represent high-performance user terminals designed to establish a connection with upstream passive optical network equipment and to provide broadband access services to the end user. GPON connection is established through the PON interface, while Ethernet interfaces are used for connection of terminal equipment.

The key GPON advantage is the optimal use of bandwidth. This technology is considered as the next step in provisioning of new high-speed Internet applications at home and office. Being developed for network deployment inside houses or buildings, these ONT devices provide robust connection with high throughput and at long distances for users living and working at remote apartment and office buildings.

An integrated router allows local network equipment to be connected to a broadband access network. The terminals protect PCs from DoS and virus attacks with the help of firewall and filter packets to control access based on ports and MAC/IP addresses of source and target. Users can configure a home or office web site by adding a LAN port into DMZ. Parental Control enables filtration of undesired web sites and blocks domains. Virtual private network (VPN) provides mobile users and branch offices with a protected communication channel for connection to a corporate network.

FXS port enables IP telephony and provides various useful features such as display of caller ID, three-way conference call, phone book, and speed dialling. This makes dialling and call pick-up user friendly.

USB ports can be used for USB-enabled devices (USB flash drives, external HDD).

NTU-RG-5520G-Wax and NTU-RG-5521G-Wax allow Wi-Fi clients to be connected using IEEE 802.11a/b/g/n/ac/ax standard. 802.11ax standard support ensures data transfer rate of 2402 Mbps and allows wireless network to be used for delivery of modern high-speed services to client equipment. Two integrated Wi-Fi network controllers enable simultaneous 2.4 GHz and 5 GHz dual-band operation.

2.2 Models

NTU-RG series devices are designed to support various interfaces and features, see Table 1 .

Table 1 – Models

Model name	WAN	LAN	FXS	Wi-Fi	USB
NTU-RG-5520G-Wax	1× GPON	4 × 1Gigabit	-	802.11ax, 2*2 – 574 Mbps – 2.4 GHz 802.11ax, 2*2 – 2402 Mbps – 5 GHz	1 × USB 3.0
NTU-RG-5521G-Wax	1 × GPON	4 × 1Gigabit	1	802.11ax, 2*2 – 574 Mbps – 2.4 GHz 802.11ax, 2*2 – 2402 Mbps – 5 GHz	1 × USB 3.0

2.3 Device Specification

Device is equipped with the following interfaces:

- 1 × RJ-11 port to connect network devices (FXS) for NTU-RG-5521-Wax;
- 1 × PON SC/APC port for connection to provider's network (WAN);
- Ethernet RJ-45 LAN ports for connection of network devices (LAN):
  - 4 ports of RJ-45 10/100/1000Base-T.
- Wi-Fi transceiver:
  - 802.11a/b/g/n/ac/ax.
- 1 × USB 3.0 port for external USB or HDD storages.

The terminal uses an external 220 V/12 V, 2 A power adapter.

The device supports the following functions:

- *Network functions:*
  - bridge or router operation mode;
  - PPPoE (auto, PAP, CHAP, MSCHAP authorization);
  - IPoE (DHCP-client and static);
  - static IP address and DHCP (DHCP client on WAN side, DHCP server on LAN side);
  - Multicast traffic transmission via Wi-Fi;
  - DNS (Domain Name System);
  - DynDNS (Dynamic DNS);
  - UPnP (Universal Plug and Play);
  - IPsec (IP Security);
  - NAT (Network Address Translation);
  - Firewall;
  - NTP (Network Time Protocol);
  - QoS;
  - IGMP snooping;
  - IGMP proxy;
  - Parental Control;
  - Storage service;
  - SMB, FTP;
  - Print Server (supported only for LAN);
  - VLAN in accordance with IEEE 802.1Q.
- *Wi-Fi:*
  - Support for IEEE 802.11a/b/g/n/ac/ax standards;
  - Simultaneous dual-band operation: 2.4 GHz and 5 GHz;
  - Support for EasyMesh.

- *VoIP*[1]*:*
  - SIP protocol;
  - Audio codecs: G.729 (A), G.711(A/U), G.723.1;
  - ToS for RTP packets;
  - ToS for SIP packets;
  - Echo cancellation (G.164 and G.165 guidelines);
  - Voice activity detection (VAD);
  - Comfort noise generator (CNG);
  - DTMF signal detection and generation;
  - DTMF transmission (INBAND, RFC2833, SIP INFO);
  - Fax transmission: G.711, T.38;
  - Caller ID display.
- *Value added services (VAS)*[1]*:*
  - Call Hold;
  - Call Transfer;
  - Call Waiting;
  - Forward unconditionally;
  - Forward on "no answer";
  - Forward on "busy";
  - Caller ID Display for ETSI FSK;
  - Anonymous calling;
  - MWI;
  - Anonymous call blocking;
  - Call Barring;
  - DND (Do not disturb).
- *Firmware update:*
  - web interface, TR-069, OMCI.
- *Remote monitoring, configuration, and setup:*
  - TR-069; web interface; OMCI; Telnet.

[1] Only for NTU-RG-5521G-Wax.

The figure below illustrates the application scheme of NTU-RG.

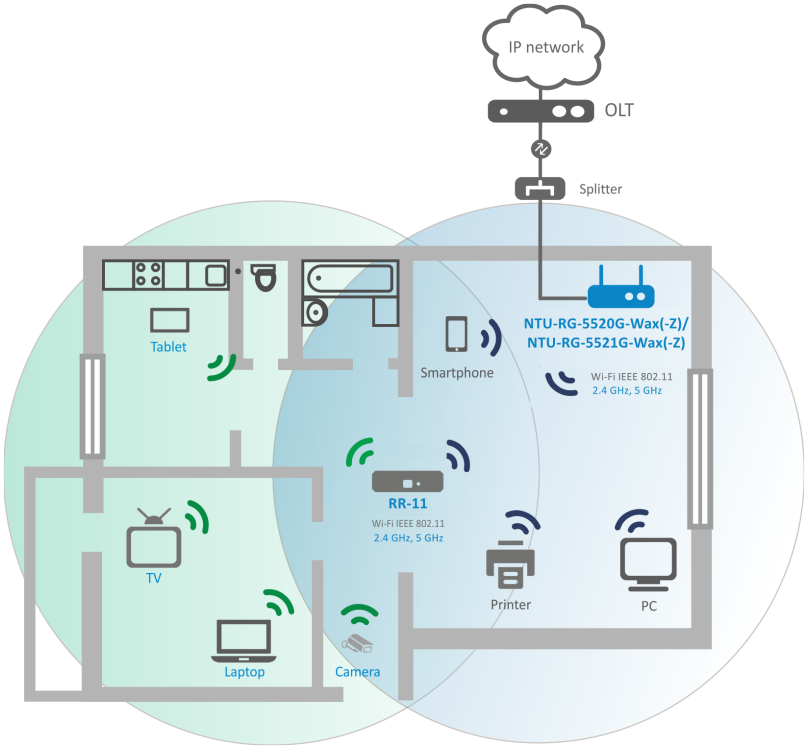


Figure 1 – NTU-RG-5520G-Wax, NTU-RG-5521G-Wax application diagram

2.4 Key Specifications

Table 2 shows main specifications of the terminals:

Table 2 – Main Specifications

VoIP protocols

Supported protocols	SIP

Audio codecs

Codecs	G.729, annex A G.711(A/μ) G.723.1 (5.3 Kbps) Fax transmission: G.711, T.38

Parameters of Ethernet LAN interfaces

Number of interfaces	4
Connector type	RJ-45
Data transfer rate, Mbps	Autonegotiation, 10/100/1000 Mbps, duplex/half-duplex

Standards	IEEE 802.3i 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE 802.3ab 1000Base-T Gigabit Ethernet IEEE 802.3x Flow Control IEEE 802.3 NWay auto-negotiation

Parameters of PON interface

Number of interfaces	1
Standards	ITU-T G.984.x Gigabit-capable passive optical networks (GPON) ITU-T G.988 ONU management and control interface (OMCI) specification IEEE 802.1Q Tagged VLAN IEEE 802.1P Priority Queues IEEE 802.1D Spanning Tree Protocol
Connector type	SC/APC in accordance with ITU-T G.984.2, ITU-T G.984.5 Filter, FSAN Class B+, SFF-8472
Transmission medium	Fiber optical cable SMF: 9/125, G.652
Splitting ratio	Up to 1:128
Maximum range of coverage	20 km
Transmitter:	1310 nm
• Upstream connection speed	1244 Mbps
• Transmitter power	from +0,5 to +5 dBm
• Optical spectrum width (RMS)	1 nm
Receiver:	1490 nm
• Downstream connection speed	2488 Mbps
• Receiver sensitivity	from -8 to -28, BER≤$1.0x10^{-10}$
Receiver optical congestion	-8 dBm

Parameters of subscriber analogue ports

Number of ports	NTU-RG-5521G-Wax
	1 FXS port
Loop resistance	Up to 1800 Ω
Call reception	Pulse/frequency (DTMF)
Caller ID display	Yes

Wi-Fi interface parameters

Standard	802.11a/b/g/n/ac/ax
Frequency range	2400 ~ 2483,5 MHz, 5150 ~ 5350 MHz, 5650 ~ 5850 MHz Simultaneous Dual Band
Modulation	CCK, BPSK, QPSK, 16 QAM, 64 QAM, 256 QAM
Data transfer rate, Mbps	– 802.11b: 1; 2; 5.5 and 11 Mbps – 802.11a: 6, 9, 12, 18, 24, 36, 48 and 54 Mbps – 802.11g: 6, 9, 12, 18, 24, 36, 48 and 54 Mbps – 802.11n: 300 Mbps (20 MHz) – 802.11ac: 866 Mbps (80 MHz) – 802.11ax: 2402 Mbps (160 MHz)
Maximum transmitter output power	– 802.11b (11 Mbps): 21 dBm – 802.11a (54 Mbps): 18 dBm – 802.11g (54 Mbps): 18 dBm – 802.11n (MCS7): 18 dBm – 802.11ac (MCS0): 19 dBm – 802.11ax (MCS0): 20 dBm – 802.11ax (MCS11): 16 dBm
MAC protocol	CSMA/CA model of ACK 32 MAC
Security	64/128-bit WEP encryption; WPA, WPA2 802.1x AES & TKIP
MIMO	2.4 GHz- 2x2, 5 GHz - 2x2
Operating temperature range	from +5 to +40°C

Control

Local control	Web interface
Remote control	Telnet, TR-069, OMCI

Firmware update	OMCI, TR-069, HTTP
Access resriction	By password

General parameters

Power supply	12 V, 2 A power adapter
Max. power consumption	18 W
Operating temperature range	From +5 to +40°C
Relative humidity	Up to 80%
Dimensions	230 × 37 × 140 mm
Weight	0.383 kg
Lifetime	no less than 5 years

2.5 Design

Subscriber terminals are designed as desktop devices in plastic housing.

The rear panel layout of NTU-RG-5520G-Wax is depicted in Figure 2 below.

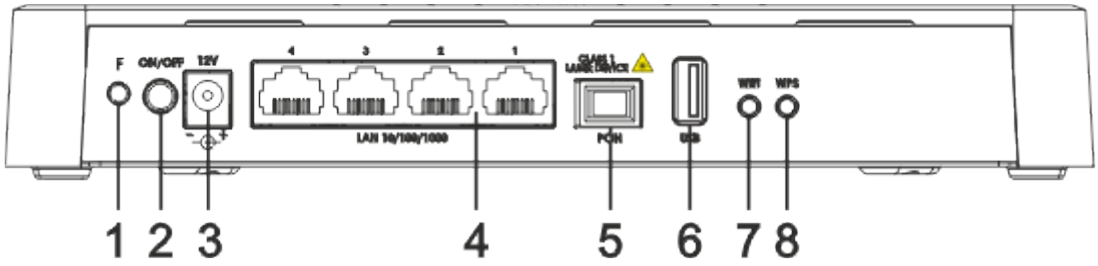


Figure 2 – NTU-RG-5520G-Wax rear panel layout

The connectors and controls located on the NTU-RG-5520G-Wax rear panel are listed in Table 3 below.

Table 3 – Description of the connectors and controls on the rear panel

№	Rear panel element	Description
1	**F**	Function button to reboot the device and reset to factory settings
2	**On/Off**	Power button
3	**12V**	Power adapter connector
4	**LAN 10/100/1000 1..4**	4 RJ-45 ports for connection to network devices
5	**PON**	SC port (socket) for PON with GPON interface
6	**USB**	Connector for external drives and other USB devices
7	**Wi-Fi**	Wi-Fi on/off button
8	**WPS**	Button for automatic secure connection to Wi-Fi network on the device

The rear panel layout of NTU-RG-5521G-Wax is depicted in Figure 3 below.

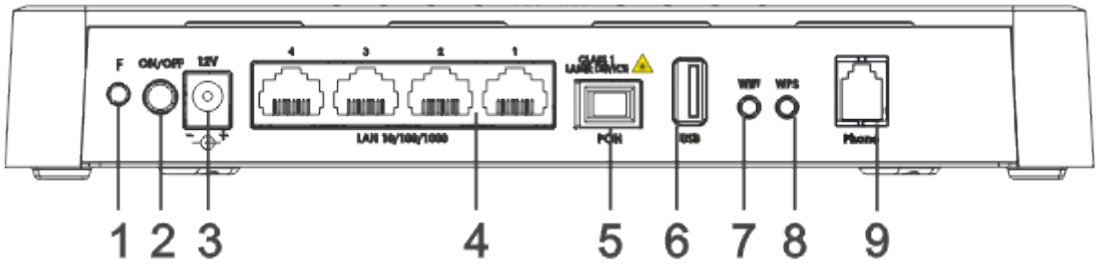


Figure 3 – NTU-RG-5520G-Wax rear panel layout

The connectors and controls located on the NTU-RG-5520G-Wax rear panel are listed in Table 4 below.

Table 4 – Description of the connectors and controls on the rear panel

№	Rear panel element	Description
1	**F**	Function button to reboot the device and reset to factory settings
2	**On/Off**	Power button
3	**12V**	Power adapter connector
4	**LAN 10/100/1000 1..4**	4 RJ-45 ports for connection to network devices
5	**PON**	SC port (socket) for PON with GPON interface
6	**USB**	Connector for external drives and other USB devices
7	**Wi-Fi**	Wi-Fi on/off button
8	**WPS**	Button for automatic secure connection to Wi-Fi network on the device
9	**Phone**	RJ-11 connector for analogue phone connection

2.6 Light Indication

Figure 4 shows NTU-RG-5520G-Wax top panel layout.

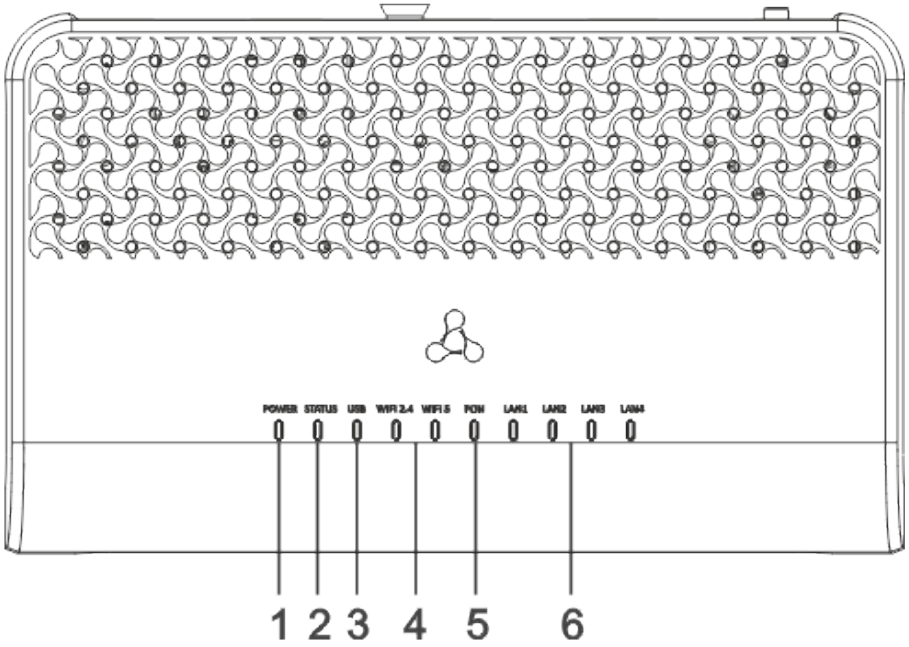


Figure 4 – NTU-RG-5520G-Wax top panel layout

The LED indicators located on the front panel show the current state of the device. The list of indicator states is shown in Table 5 below.

Table 5 – Description of NTU-RG-5520G-Wax top panel LEDs

№	Top panel element	LED status	Description
1	***Power*** – device power and activity status indicator	off	device is disconnected from the power source or faulty
		red	device startup is in progress
		green	device startup is completed, the current device configuration differs from the default one
		orange	device startup is completed, the default configuration is set
2	***Status*** – status indicator	off	Internet interface is not configured
		green	device is ready for operation, Internet connection is established
		flashes green slowly	device firmware update is in progress
		flashes green rapidly	device booting/connection to the Internet is being established

№	Top panel element	LED status	Description
3	***USB*** – USB port activity indicator	off	USB device is not connected
		on	USB device is connected
		flashes	transmitting data via USB
4	***Wi-Fi 2.4*** – Wi-Fi activity indicator for 2.4 GHz ***Wi-Fi 5*** – Wi-Fi activity indicator for 5 GHz	green	Wi-Fi network is active
		flashes	transmitting data via Wi-Fi
		off	Wi-Fi network is inactive
5	***PON*** – optical interface activity indicator	off	device booting
		green	connection between optical line terminal and the device has been established
		flashes green	connection between optical line terminal and the device has been established (the device is not activated)
		flashes red	no signal from optical line terminal
6	***LAN1..4*** – Ethernet port activity indicator	green	established 10/100 Mbps connection
		orange	established 1000 Mbps connection
		flashes	transferring data packets

The front panel of NTU-RG-5521G-Wax is shown in Figure 5 below.

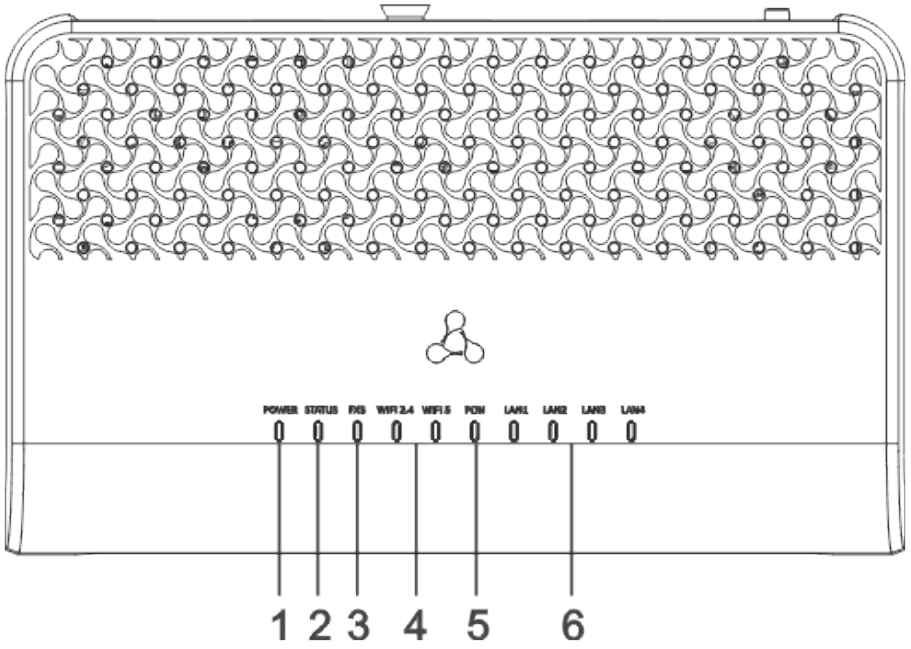


Figure 5 – NTU-RG-5521G-Wax front panel layout

The LED indicators located on the front panel show the current state of the device. The list of indicator states is shown in Table 6.

Table 6 – Description of NTU-RG-5521G-Wax front panel LEDs

№	Front panel element	LED status	Description
1	***Power*** – device power and activity status indicator	off	device is disconnected from the power source or faulty
		red	device startup is in progress
		green	device startup is completed, the current device configuration differs from the default one
		orange	device startup is completed, the default configuration is set
2	***Status*** – status indicator	off	Internet interface is not configured
		green	device is ready for operation, Internet connection is established
		flashes green slowly	device firmware update is in progress
		flashes green rapidly	device booting/connection to the Internet is being established
3	***FXS*** – FXS port activity indicator	off	SIP agent is not configured/not registered/off
		on	SIP agent is successfully registered
		flashes	off hook/phone call
4	***Wi-Fi 2.4*** – Wi-Fi activity indicator for 2.4 GHz ***Wi-Fi 5*** – Wi-Fi activity indicator for 5 GHz	green	Wi-Fi network is active
		flashes	transmitting data via Wi-Fi
		off	Wi-Fi network is inactive
5	***PON*** – optical interface activity indicator	off	device booting
		green	connection between optical line terminal and the device has been established
		flashes green	connection between optical line terminal and the device has been established (the device is not activated)
		flashes red	no signal from optical line terminal
6	***LAN1..4*** – Ethernet port activity indicator	green	established 10/100 Mbps connection
		orange	established 1000 Mbps connection
		flashes	transferring data packets

2.7 Indication of LAN Interfaces

Table 7 below lists operation modes shown by LAN ports LEDs located on the rear panel of the device.

Table 7 – Light Indication of LAN Interfaces

Operation modes	Yellow LED	Green LED
Port operates in 1000BASE-T mode, data transfer is inactive	solid on	off
Port operates in 1000BASE-T mode, data transfer is active	flashes	off
Port operates in 10/100BASE-TX, data transfer is inactive	off	solid on
Port operates in 10/100BASE-TX, data transfer is active	off	flashes

2.8 Reboot and Reset to Factory Settings

For device reboot, press the "F" button on the device rear panel once.

In order to reset the device to the factory settings, press the "F" button and hold it for 7-10 seconds until the indicator **Power** glows red and all other LEDs go out.

Factory settings for IP address are: *LAN – 192.168.1.1*, subnet mask – *255.255.255.0*. Access can be provided from LAN 1, LAN 2, LAN 3 and LAN 4 ports.

2.9 Delivery Package

NTU-RG-5520G-Wax, NTU-RG-5521G-Wax standard delivery package includes:

- NTU-RG optical network terminal;
- 220V/12V, 2A power adapter;
- Installation and initial configuration guide.

3 Installation and connection

3.1 Operating conditions

- Do not install the device near heat sources.
- Install the device in a place protected from direct sunlight.
- Do not expose the device to smoke, dust, water, or other liquids. Avoid mechanical damage to the device.
- Do not open the device case. There are no user-serviceable parts inside the device.
- Equipment disposal should be performed separately from household waste.

Do not place objects on the surface of the equipment in order to prevent overheating and malfunction of the device and its components.

3.2 Installation recommendations

1. Before installing and turning on the device, it is necessary to check the device for visible mechanical damage. In case of any damage, stop installing the device, draw up an appropriate report and contact the supplier.
2. If the device has been at a low temperature for a long time, it must be kept at room temperature for at least two hours before starting work.
3. If the device has been exposed to high humidity for a long time, it must be kept under normal conditions for at least 12 hours before switching on.
4. The device is installed in a horizontal position, following the safety instructions.
5. To ensure the best-performing Wi-Fi network coverage, consider the following guidelines when placing a device:
    - Minimize the number of obstacles (walls, ceilings, furniture, etc.) between the router and other wireless network devices;
    - Do not install the device near (about 2 m) electrical or radio devices;
    - It is not recommended to use radiotelephones and other equipment operating at 2.4 GHz or 5 GHz within the range of a wireless Wi-Fi network;
    - Obstacles in the form of glass/metal structures, brick/concrete walls, as well as water tanks and mirrors can significantly reduce the range of a Wi-Fi network.

3.3 Connecting an optical terminal

1. Connect the optical cable provided by your Internet provider to the PON connector.
2. Connect the optical terminal to a 220 V network via a power adapter. Turn on the device by pressing the "On/Off" button. Wait until the device is fully loaded, which may take 30–120 seconds.
3. Make sure that the following indicators are constantly on: POWER, WLAN5, WLAN2.4, PON, and Status. This means that the device is connected correctly and running.

3.4 Connecting devices to an optical terminal

3.4.1 Wired connection

1. Using an Ethernet cable, connect the LAN port Port1/Port2 of the optical terminal and the Ethernet port of the computer.
2. Using an Ethernet cable, connect the LAN port Port3/Port4 (defined by your provider) of the optical terminal and the Ethernet port of the set-top box or other devices.

3.4.2 Wireless connection

Connect device (laptop, smartphone, etc.) to the terminal's network. To do this:

1. Enable wireless network detection on the user's device.
2. In the list of available networks, find the network with the name (SSID) that matches the name indicated on the bottom panel of the terminal.
3. Select this network and enter the password specified on the bottom panel of the terminal.

3.4.3 WPS connection

The device supports connecting the client to the terminal's Wi-Fi network according to the WPS standard.

Connection procedure:

1. Select the WPS connection method on the client device.
2. Press and hold the WPS button on the rear or side panel of the terminal (depending on the model) for one second.

The client will connect to the terminal automatically.

Connecting the client device to the terminal takes no more than two minutes. If one couldn't connect the device the first time, try again and make sure that the WPS function on the client device was enabled no later than 2 minutes after enabling the WPS function on the terminal.

The WPS feature is enabled by default. One can disable the feature in the web interface in the "WLAN" → "WPS" submenu.

4 NTU-RG architecture

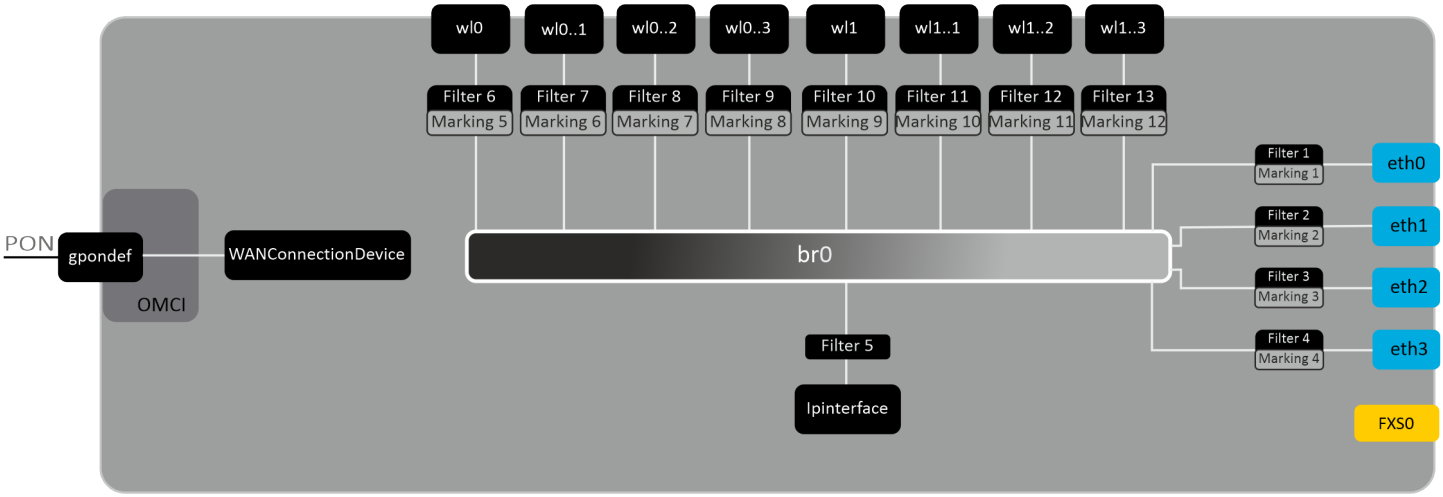


Figure 6 – Logical Architecture of a Device with Factory Settings[1]

[1] FXS0 interface is available for NTU-RG-5521G-Wax only.

Main Components of the Device:

- **Optical receiver/transmitter (SFF module)** for conversion of an optical signal into an electric one;
- **Processor (PON chip)** which converts Ethernet and GPON interfaces**;**
- **Wi-Fi modules** for wireless interfaces of the device.

A device with factory (initial) settings have the following logical blocks (see Figure 6):

- Br0;
- eth0…3;
- FXS0;
- wl0, wl0.1, wl0.2, wl0.3, wl1, wl1.1, wl1.2, wl1.3;
- IPInterface.

Br0 block here is used to combine LAN ports into a single group.

Eth0..3 blocks physically represent Ethernet ports with RJ-45 connector for connection of PC, STB, and other network devices. They are logically included into **br0** block.

FXS0 block is a port with RJ-11 connectors for connection of analogue phone. It is logically included into the Voice block. The Voice block can be controlled through web interface or remotely with ACS server via TR-069 standard. The block specifies VoIP service parameters (SIP server address, phone number, VAS, etc.).

wl0, wl0.1…wl1.3 blocks for Wi-Fi modules connection. wl0 blocks are interfaces for 2.4 GHz operation, wl1 ones – for 5 GHz operation.

Filter and **Marking** blocks enable inclusion of local interfaces into a single group (to **br0** block). They deal with the traffic transmission rules, **Filter** blocks are responsible for the incoming traffic on the interface, **Marking** blocks are responsible for the outgoing one.

IPInterface block is a logical entity on which IP address providing the access in LAN and DHCP server distributing addresses to clients are located.

5 Device configuration via Web interface. User Access

Getting Started

To configure the device, it is necessary to connect to it through Web browser:

1. Open a web browser (program for viewing hypertext documents), for example, Firefox, Google Chrome etc.
2. Enter the device IP address in the browser address line.

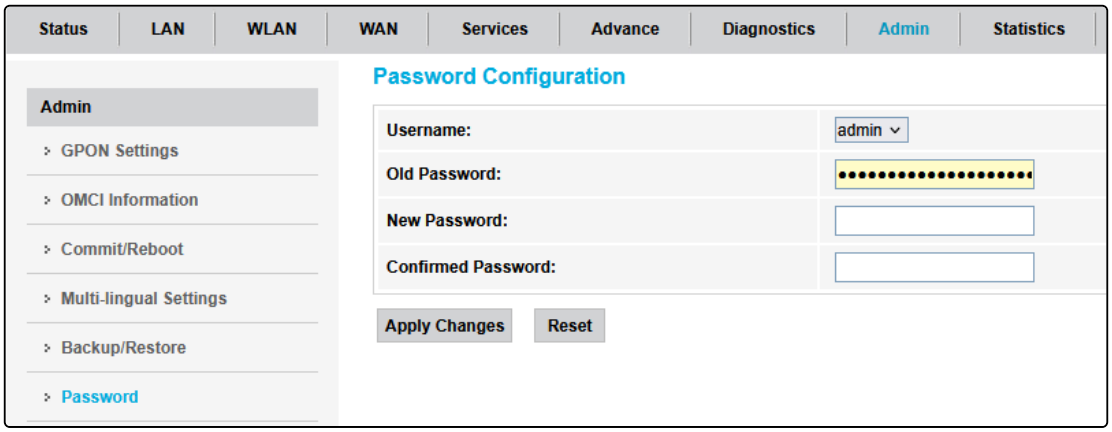
   Default IP address of the device – ***192.168.1.1***, subnet mask – ***255.255.255.0***

   When the device is successfully connected, web interface login and password request page will be shown in the browser window.
3. Enter your username and password.

   Username: ***admin***, password: ***kW5i_1bYC6os***.
4. Click the "Log in" button. The Home page will open in the browser window.

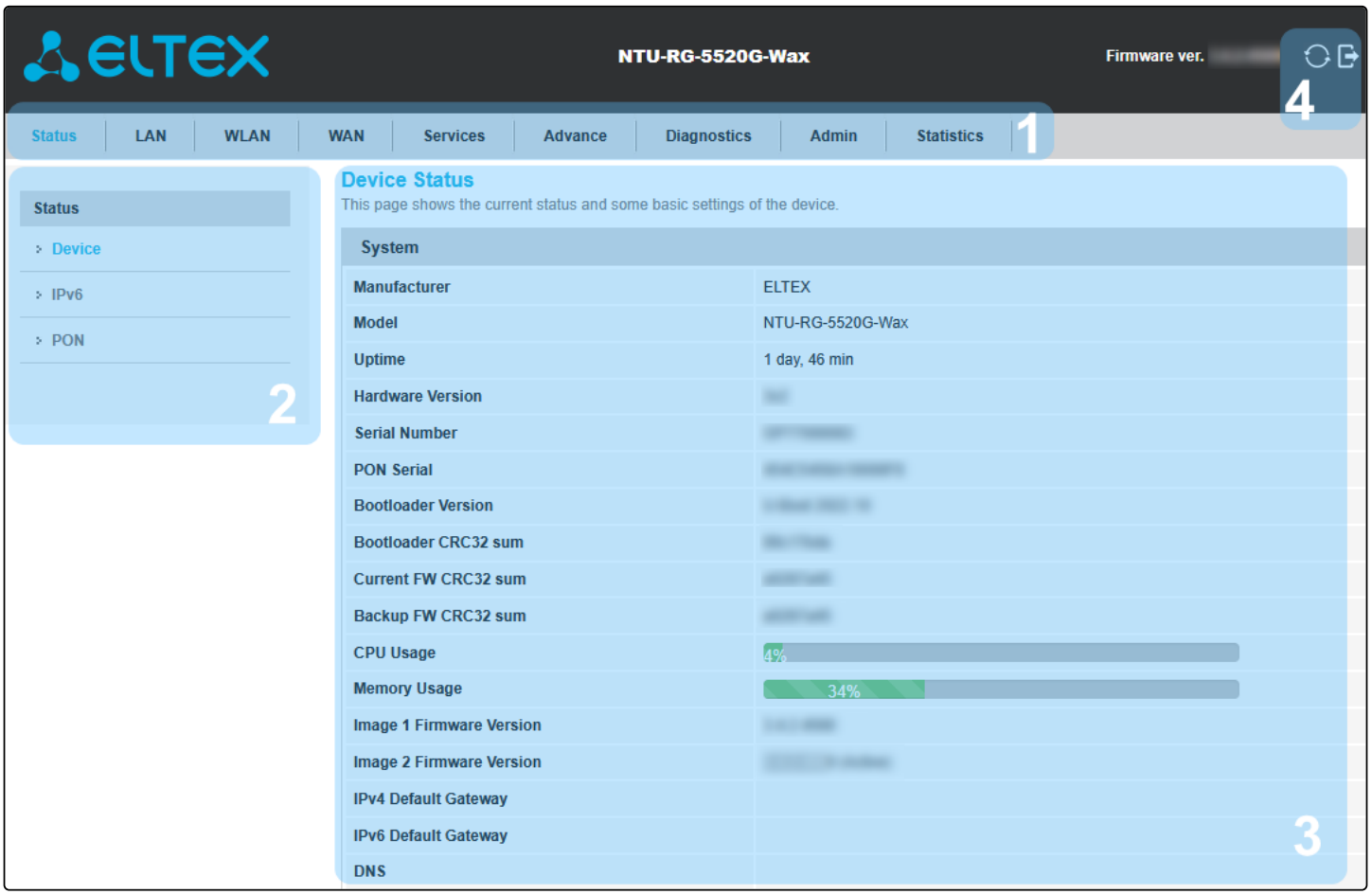
Password changing

To prevent unauthorized access to device, it is recommended to change password. To change the password go to the *"Admin"* menu, *"Password"* submenu. Enter the current password in the *"Old Password"* field and the new password in the "*New Password*" and "*Confirmed password*" fields. To save the changes, click the "Apply Changes" button.



Main elements of the web interface

General view of the device configuration window is depicted below.



The user interface window can be divided into 4 parts:

1. The device settings menu tabs.
2. The navigation tree on the device settings submenus.
3. The main settings window for the selected submenu.
4. Reboot and log out buttons.

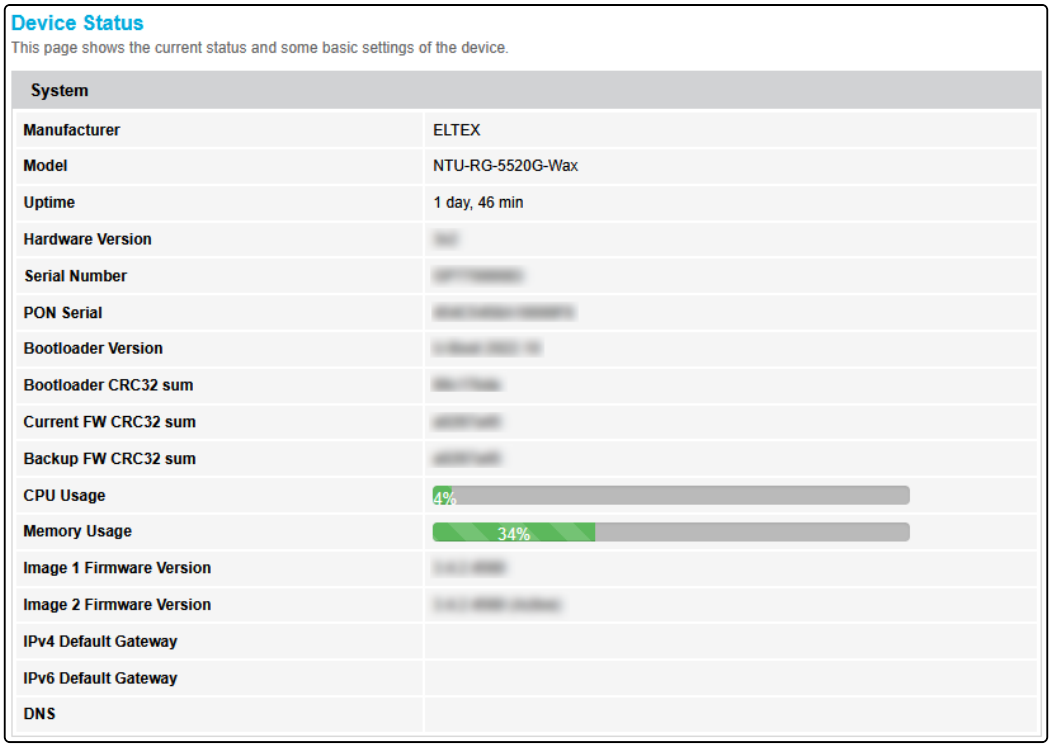
5.1 The "Status" menu

5.1.1 The "Status" submenu

5.1.1.1 The "Device" submenu. Device general information

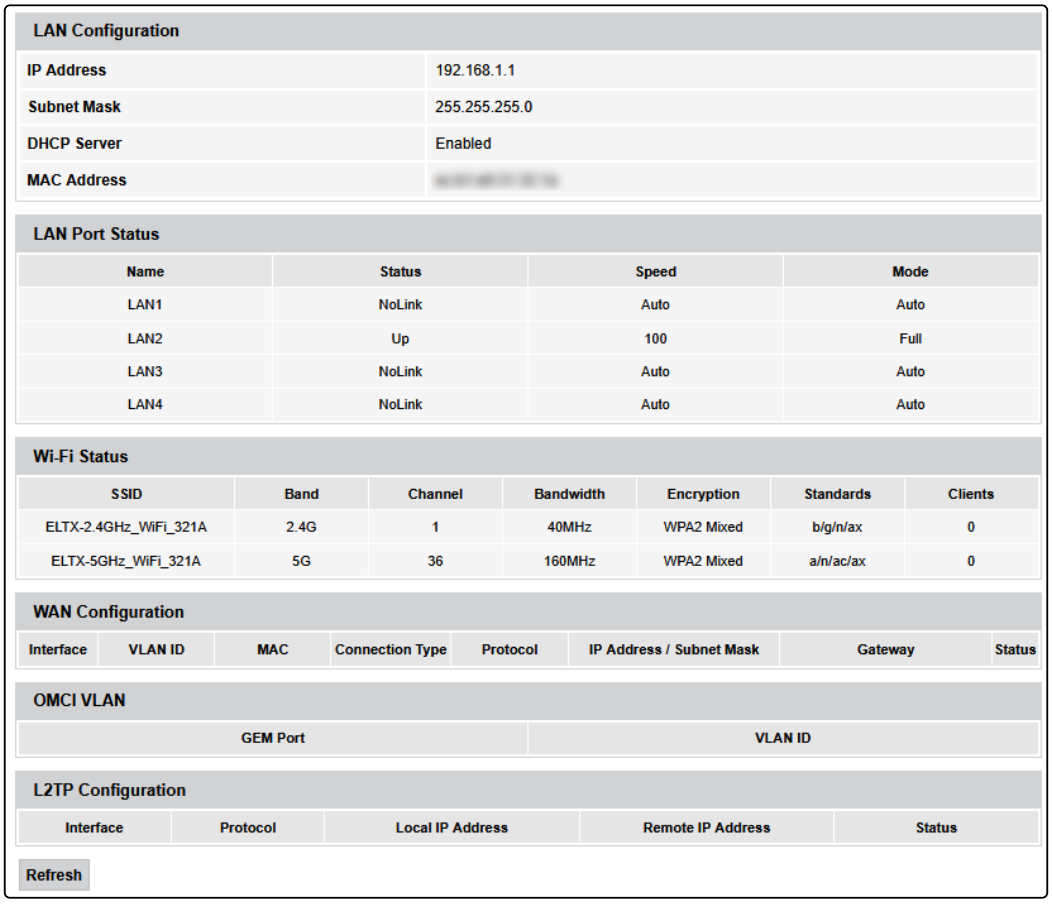
This section displays general information about the device, the main parameters of the LAN and WAN interfaces.

Status → Status → Device status



System

- *Manufacturer* – manufacturer;
- *Model* – device model;
- *Uptime* – device uptime;
- *Hardware Version* – hardware version;
- *Serial Number* – device serial number;
- *PON Serial* – device serial number in the PON network;
- *Bootloader Version* – firmware bootloader version;
- *Bootloader CRC32 sum* – firmware bootloader checksum;
- *Current FW CRC32 sum* – current firmware image checksum;
- *Backup FW CRC32 sum* – backup firmware image checksum;
- *CPU Usage* – CPU utilization percent;
- *Memory Usage* – memory utilization percent;
- *Image 1 Firmware Version* – current firmware version;
- *Image 2 Firmware Version* – backup firmware version;
- *IPv4 Default Gateway* – IPv4 default gateway;
- *IPv6 Default Gateway* – IPv6 default gateway;
- *DNS* – DNS server name.



LAN Configuration

IP Address	192.168.1.1
Subnet Mask	255.255.255.0
DHCP Server	Enabled
MAC Address	[redacted]

LAN Port Status

Name	Status	Speed	Mode
LAN1	NoLink	Auto	Auto
LAN2	Up	100	Full
LAN3	NoLink	Auto	Auto
LAN4	NoLink	Auto	Auto

Wi-Fi Status

SSID	Band	Channel	Bandwidth	Encryption	Standards	Clients
ELTX-2.4GHz_WiFi_321A	2.4G	1	40MHz	WPA2 Mixed	b/g/n/ax	0
ELTX-5GHz_WiFi_321A	5G	36	160MHz	WPA2 Mixed	a/n/ac/ax	0

WAN Configuration

Interface	VLAN ID	MAC	Connection Type	Protocol	IP Address / Subnet Mask	Gateway	Status

OMCI VLAN

GEM Port	VLAN ID

L2TP Configuration

Interface	Protocol	Local IP Address	Remote IP Address	Status

Refresh

LAN Configuration

- *IP Address* – device IP address;
- *Subnet Mask* – device subnet mask;
- *DHCP Server* – DHCP server state;
- *MAC Address* – device MAC address.

LAN Port Status

- *Name* – LAN port name;
- *Status* – LAN port status;
- *Speed* – connection speed of an external network device to a port;
- *Mode* – port operation mode (half/full/auto).

Wi-Fi Status

- *SSID* – name of the access point wireless network;
- *Band* – band;
- *Channel* – channel number;
- *Bandwidth* – bandwidth;
- *Encryption* – encryption method;
- *Standarts* – network standards;
- *Clients* – connected clients quantity;

WAN Configuration

- *Interface* – interface name;
- *VLAN ID* – interface VLAN ID;
- *MAC* – interface MAC address;
- *Connection Type* – connection type;
- *Protocol* – protocol used;
- *IP Address/Subnet Mask* – interface IP address/subnet mask;

- *Gateway* – gateway;
- *Status* – interface status.

OMCI VLAN

- *GEM Port* – virtual interface used to transmit service traffic;
- *VLAN ID* – VLAN identifier.

L2TP Configuration

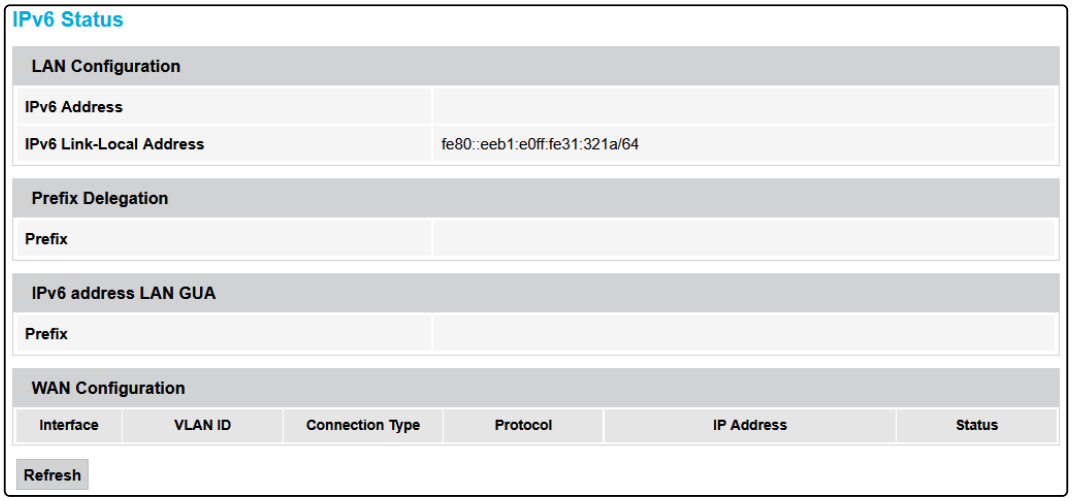
- *Interface* – interface name;
- *Protocol* – used protocol;
- *Local IP Address* – L2TP interface IP address;
- *Remote IP Address* – server IP address;
- *Status* – interface status.

Click the "Refresh" button to update the page.

5.1.1.2 The "IPv6 Status" submenu. Information about IPv6 system

The tab displays the current status of IPv6 system.

Status → Status → IPv6



LAN Configuration

- IPv6 Address – IPv6 address;
- IPv6 Link-Local Address – local IPv6 address.

Prefix Delegation

- *Prefix – IPv6 address prefix.*

WAN Configuration

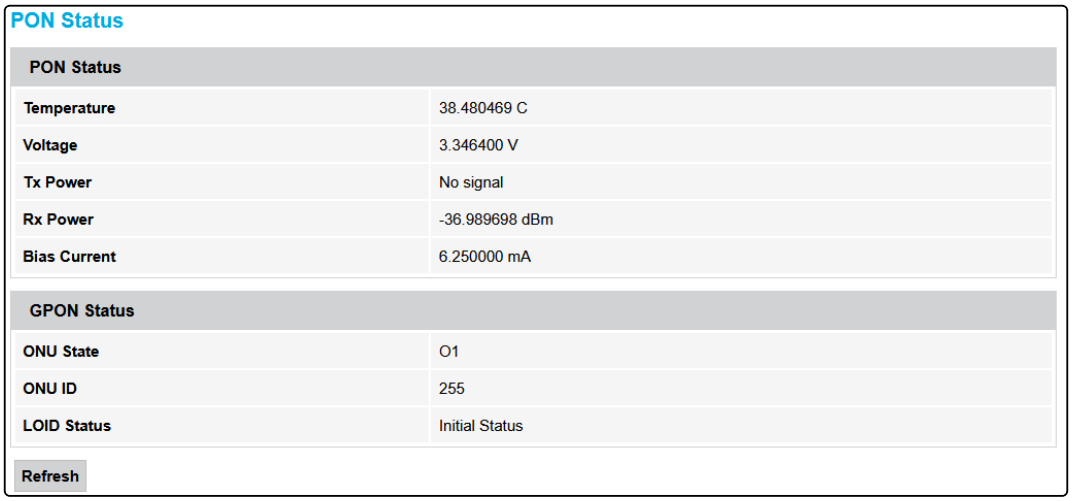
- *Interface* – interface name;
- *VLAN ID* – interface VLAN ID;
- *Connection Type* – connection type;
- *Protocol* – protocol used;
- *IP Address* – interface IP address;
- *Status* – interface status.

Click the "Refresh" button to update the page.

5.1.1.3 The "PON" submenu. Optical module status information

The tab displays the current status of PON interface system.

Status → Status → PON



PON Status

- *Temperature* – current temperature;
- *Voltage* – voltage;
- *Tx Power* – transmission power;
- *Rx Power* – reception power;
- *Bias Current* – bias current;
- Video Power – video signal power[1].

PON Status

- *ONU State* – status of authorization on OLT (O1 -> O2 -> O3 -> O4 -> O5);
- *ONU ID* – device identifier on OLT;
- *LOID Status* – status of authorization on OLT (Initial -> Standby -> Serial Number -> Ranging -> Operation).

Click the "Refresh" button to update the page.

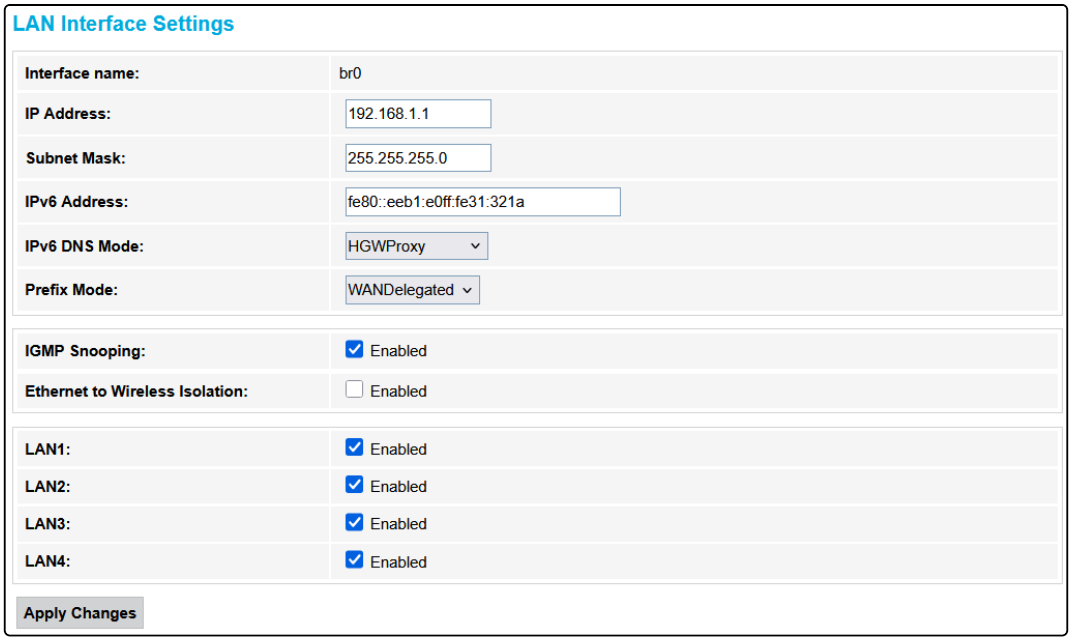
---

[1] Only for NTU-RG-5421GC-Wac

5.2 The "LAN" menu. LAN interface status information

In the "LAN" section you can view the status of LAN ports of the device and Wi-Fi interfaces.

Status → LAN



The LAN Port Status table shows:

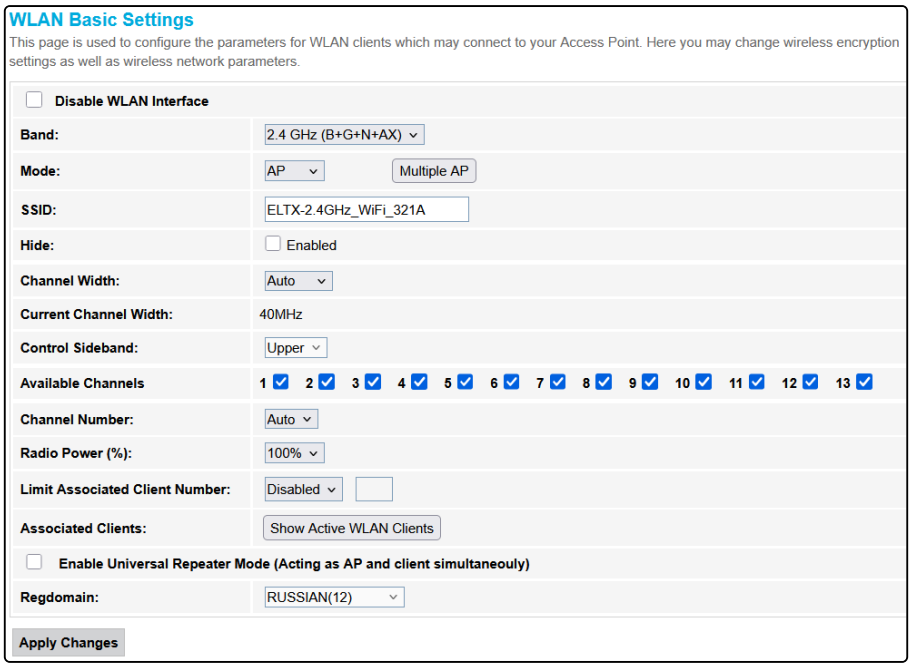
- *Interface name* – interface name;
- *IP Address* – interface IP address;
- *Subnet Mask* – interface subnet mask;
- *IPv6 Address* – IPv6 address;
- *IPv6 DNS Mode* – configure the domain name usage mode:
  - *WANConnection* – use WAN interface for obtaining DNS server address;
  - *Static* – specify static DNS server address (IPv6 DNS1, IPv6 DNS2).
- *Prefix Mode* – configure the Prefix reception mode (from WAN interface or statically):
  - *WANDelegated* – enables the option of delegating the prefixes received from the ISP;
  - *Static* – specify static Prefix.
- *IGMP Snooping* – enable/disable IGMP Snooping;
- *Ethernet to Wireless Blocking* – enable/disable isolation of wired and wireless clients.
- *LAN1/LAN2/LAN3/LAN4* – LAN port state.

5.3 The "WLAN" menu. Wireless network settings

5.3.1 The "Basic Settings" submenu

This section contains individual settings for each of the operating bands – 2.4 GHz (wlan0 tab) and 5 GHz (wlan1 tab).

WLAN → wlan0 (2.4GHz)/wlan1 (5GHz) → Basic Settings



- *Disable WLAN Interface* – disable radio interface;
- *Band* – change Wi-Fi operation standard;
- *Mode* – access point (AP) operation mode;
- *SSID* – assign a wireless network name (case sensitive);

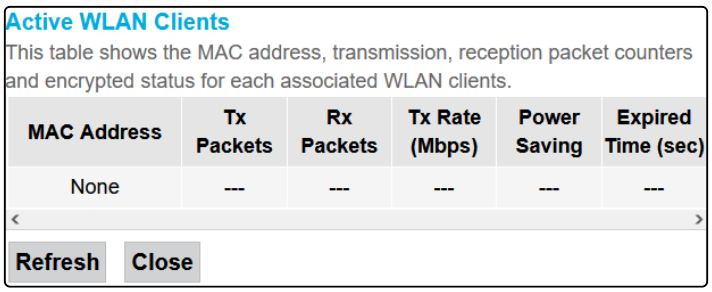
Default device SSID is ELTX-2.4GHz_WiFi__aaaa, where "aaaa" – the last 4 digits of WAN MAC. WAN MAC is labelled on the device housing. The network name contains a frequency band (2.4 GHz).

- *Hide* – disable main access point;
- *Channel Width* – set channel width 20, 40 MHz (for Wi-Fi standards: 2.4 GHz (N), 2.4 GHz (G+N), 2.4 GHz (B+G+N));
- *Current Channel Width*;
- *Control Sideband* – management sideband, select the second channel (Lower or Upper) (for Wi-Fi standards: 2.4 GHz (N), 2.4 GHz (G+N), 2.4 GHz (B+G+N));
- *Available Channels* – select channel;
- *Channel Number* – select utilized channel:
  - *Auto* – automatic channel selection.
- *Radio Power (%)* – transmitter power;
- *Limit Associated Client Number* – limit the maximum amount of associated clients;
- *Associated Clients* – amount of associated clients;
- *Enable Universal Repeater Mode (Acting as AP and client simultaneouly)* – enable repeater mode;
- *Regdomain* – region settings.

To save the changes, click the "Apply Changes" button.

The "Show Active WLAN Client" button outputs the table of active WLAN clients.

WLAN → wlan0 (2.4GHz) / wlan1 (5GHz) → Basic settings → Show Active WLAN Client



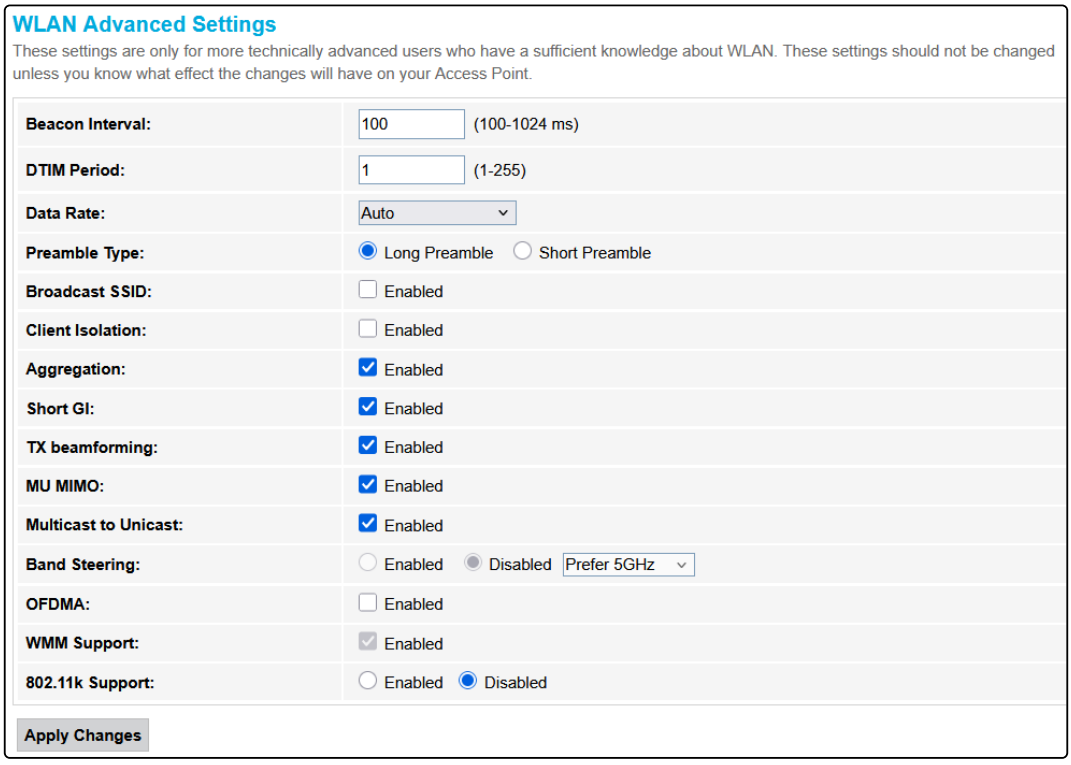
- *MAC Address* – MAC address of the client;
- *Tx Packets* – amount of packets transmitted to the client;
- *Rx Packets* – amount of packets received from the client;
- *Tx Rate (Mbps)* – channel transmission rate, Mbps;
- *Power Saving* – power saving mode;
- *Expired Time (sec)* – address leasing expiration time, s.

To update the information in the table, click the "Refresh" button, to close the table, click "Close".

5.3.2 The "Advanced settings" submenu

In this submenu you can perform advanced configuration of wireless network.

WLAN → wlan0 (2.4GHz) / wlan1 (5GHz) → Advanced settings



- *Beacon Interval* – time period for transmission of informational packets, which indicate activity of the access point, to the wireless network;
- *DTIM Period* – interval between sending packets from buffer;
- *Data rate* – transmission rate;
- *Preamble Type* (*Long Preamble*/*Short Preamble*) – select the preamble;
- *Broadcast SSID (Enabled/Disabled)* – broadcast SSID to the network (will be hidden if *Disabled* is selected);

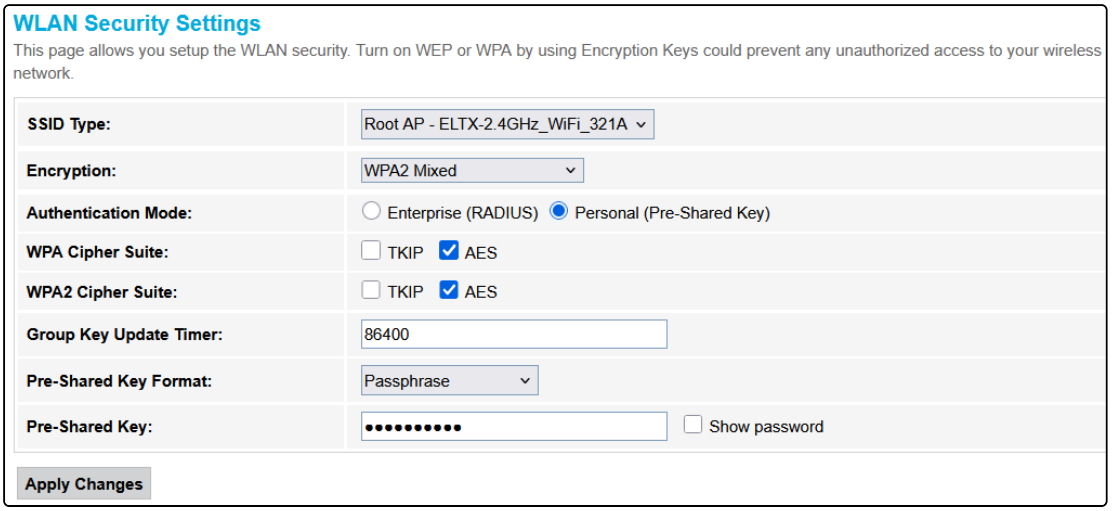
- *Client Isolation (Enabled/Disabled)* – enable/disable client blocking;
- *Aggregation (Enabled/Disabled)* – enable/disable frames aggregation to increase the bandwidth;
- *Short GI (Enabled/Disabled)* – enable/disable a short guard interval;
- *TX beamforming (Enabled/Disabled)* – enable/disable adaptive beamforming;
- *MU MIMO (Enabled/Disabled)* – enable/disable Multi-user MIMO mode;
- *Multicast to Unicast (Enabled/Disabled)* – enable/disable multicast-unicast conversion;
- *OFDMA (Enabled/Disabled)* – enable/disable multi-user version of digital modulation;
- *WMM Support (Enabled/Disabled)* – enable/disable the support for Wi-Fi Multimedia;
- *802.11k Support (Enabled/Disabled)* – enable/disable 802.11k support.

To save the changes, click the "Apply Changes" button.

5.3.3 The "Security" Submenu. Security Settings

Use this menu to configure general data encryption settings for a wireless network. The client wireless equipment can be configured either manually or automatically with the help of WPS.

WLAN → wlan0 (2.4GHz) / wlan1 (5GHz)→ Security



- *SSID Type* – current SSID;
- *Encryption* – set the encryption mode:
  - *NONE (open)* – no wireless network protection;
  - *WEP* – WEP encryption algorithm;
  - *WPA/WPA2/WPA2 Mixed/WPA3/WPA3 Transition* – WPA/WPA2/WPA2 Mixed/WPA3/WPA3 Transition encryption algorithm;
  - *Enchanced open* – wireless network protection with Enchanced open algorithm;
  - *Enchanced open Transition* – wireless network protection with Enchanced open Transition algorithm.

When the *WEP* encryption mode is selected, the following settings are available:

- *802.1x Authentication* – enables 802.1x standard (enables user authentication with RADIUS server, WEP key is used for data encryption);
- *Authentication* – select authentication mode:
  - *Open system* – without authentication;
  - *Shared Key* – pre-shared key authentication;
  - *Auto* – automatic authentication.
- *Key Length (encryption strength)* – use 64- or 128-bit keys;
- *Key Format* – use ASCII or HEX format;
- *Encryption Key* – 10 hex characters key or 5 ASCII characters for 64-bit encryption. Other options are 26 hex characters or 13 ASCII characters for 128-bit encryption.

When the *WPA/WPA2/WPA2 Mixed/WPA3/WPA3 Transition* encryption mode is selected, the following settings are available:

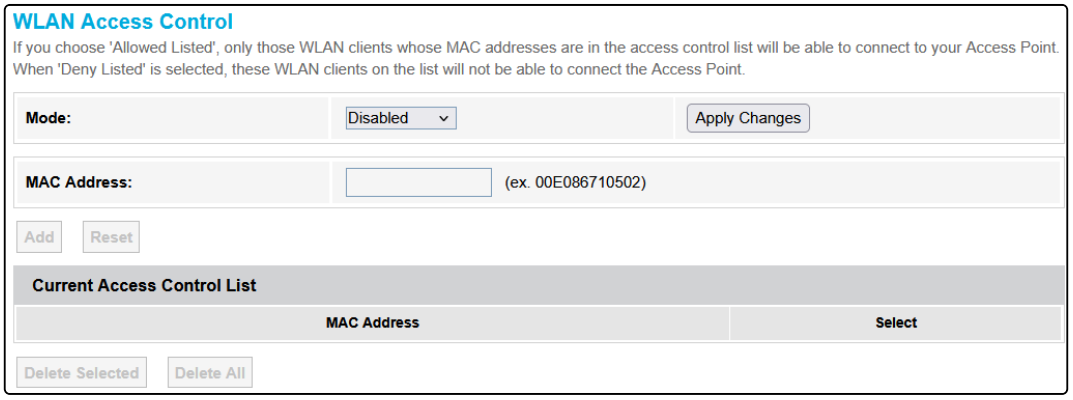
- *Authentication Mode* – Enterprise (RADIUS) or Personal (Pre-Shared Key) authentication mode:
- *IEEE 802.11w* – enable service frame encryption;
  - *None* – disable service frame encryption;
  - *Capable* – encryption compatibility mode;
  - *Required* – encryption is required.
- *SHA256 (Enable/Disable)* – enable/disable SHA256 usage.
- *WPA Cipher Suite* – set of WPA *TKIP* or *AES* fonts;
- *WPA2 Cipher Suite* – set of WPA *TKIP* or *AES* fonts;
- *Group Key Update Timer* – key update timer;
- *RADIUS Server/Backup RADIUS Server:*
  - *IP Address* – RADIUS server IP address;
  - *Port* – RADIUS server port number. The default port is 1812;
  - *Password* – Secret key for access to the RADIUS server;
  - *Show password* – show password when checkbox is selected.
- *Pre-Shared Key Format* – key format: ASCII or HEX;
- *Pre-Shared Key* – access key.

To see the encrypted access key, select the "Show password" checkbox. To save the changes, click the "Apply Changes" button.

5.3.4 The "Access Control" Submenu. Access settings

The menu allows filtering configuration for MAC addresses. All added MAC addresses will be displayed in the *Current Access Control List*. When selecting the *"Allow Listed"* mode, only those MAC addresses that are in the *Current Access Control List* can connect to the access point. When the *"Deny Listed"* mode is selected, all MAC addresses except those specified in the *Current Access Control List* will have access. To change the mode, click the "Apply Changes" button.

WLAN → wlan0 (2.4GHz) / wlan1 (5GHz) → Access control



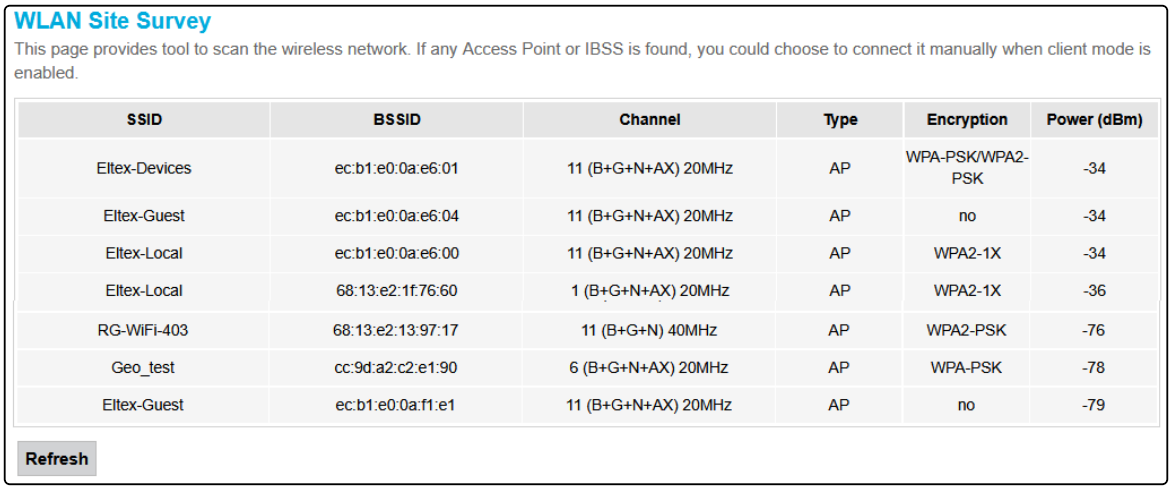
- *Mode* – MAC filtering mode:
  - *Disabled* – filter is not used;
  - *Allow Listed* – filtering on the basis of allowed addresses (white list);
  - *Deny Listed* – filtering on the basis of denied addresses (black list).
- *MAC Address* – field to add MAC address to the filtering table. To enter the value, click "Add" or click "Reset" to reset the value.

To remove selected items in the list, click "Delete Selected"; click "Delete All" to remove the whole list.

5.3.5 The "Wi-Fi radar" submenu. Wireless network scanning

Use this menu to scan a wireless network and to detect nearby access points or IBSS.

WLAN → wlan0 (2.4GHz) / wlan1 (5GHz) → WiFi Radar



The table displays the following information:

- *SSID* – wireless access point name;
- *BSSID* – access point MAC address;
- *Channel* – channel;
- *Type* – type (AP (Access Point), Client);
- *Encryption* – encryption method;
- *Power (dBm)* – received signal power.

To scan the environment, click the "Refresh" button.

5.3.6 The "WPS" submenu. Easy connection to Wi-Fi network

This section configures WPS (Wi-Fi Protected Setup) connection.

WLAN → wlan0 (2.4GHz) / wlan1 (5GHz) → WPS

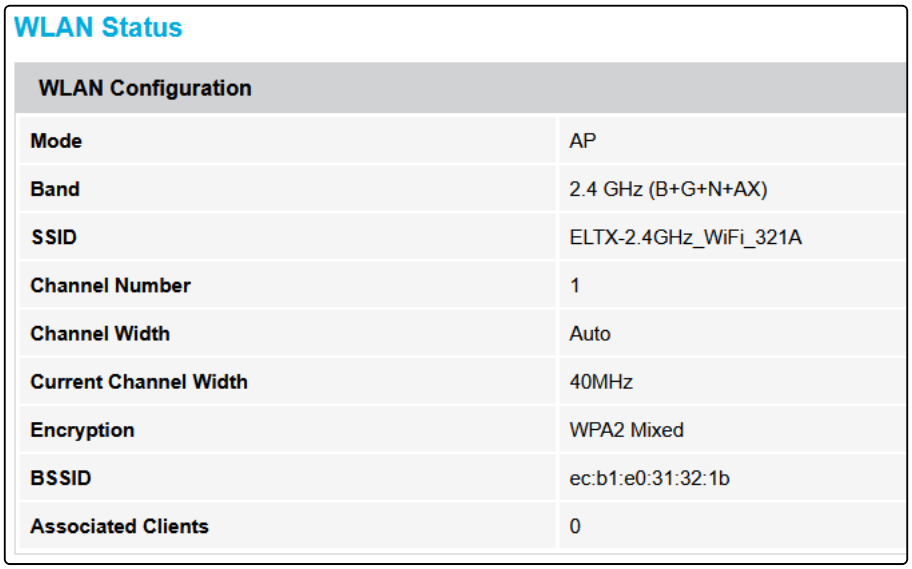
- *Disable WPS* – disable the possibility of connecting to the router using WPS technology;
- *Start WPS configuration:*
  - *Start PBC* – activate the WPS function on the router to connect subscribers.

To save the changes, click the "Apply Changes" button.

5.3.7 The "Status" submenu. Current WLAN status

This submenu displays the current status of the WLAN.

WLAN → wlan0 (2.4GHz) / wlan1 (5GHz) → Status



WLAN Status

WLAN Configuration	
Mode	AP
Band	2.4 GHz (B+G+N+AX)
SSID	ELTX-2.4GHz_WiFi_321A
Channel Number	1
Channel Width	Auto
Current Channel Width	40MHz
Encryption	WPA2 Mixed
BSSID	ec:b1:e0:31:32:1b
Associated Clients	0

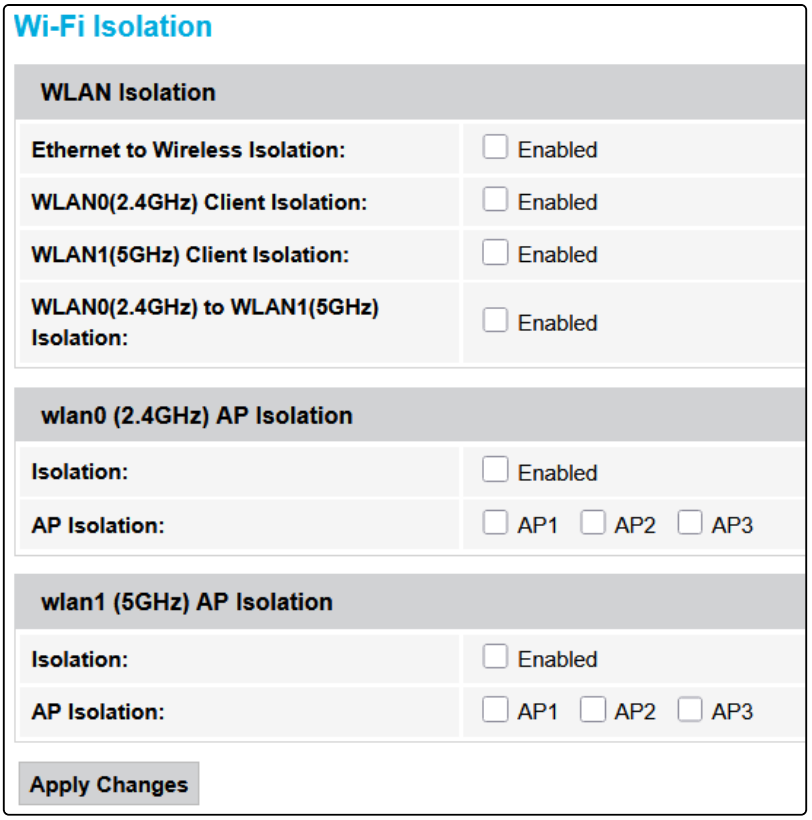
- *Mode* – AP (access point);
- *Band* – range, band, standards;
- *SSID* – access point network name;
- *Channel Number* – channel number;
- *Channel Width* – channel width;
- *Encryption* – encryption method;
- *BSSID* – access point MAC address;
- *Associated Clients* – number of connected clients.

To save the changes, click the "Apply Changes" button.

5.3.8 The "Wi-Fi Isolation" submenu. Wi-Fi isolation mode setting

This submenu displays isolation modes to protect a device from attacks by another device on the same network.

WLAN → Wi-Fi Isolation



WLAN Isolation

- *Ethernet to Wi-Fi Isolation (Enabled/Disabled)* – enable/disable Isolation between LAN and wireless network;
- *WLAN0(2.4GHz) Client Isolation (Enabled/Disabled)* – enable/disable Isolation between clients in 2.4 GHz band;
- *WLAN1(5GHz) Client Isolation (Enabled/Disabled)* – enable/disable Isolation between clients in 5 GHz band;
- *WLAN0(2.4GHz) to WLAN1(5GHz) Isolation (Enabled/Disabled)* – enable/disable isolation between 2.4 GHz and 5 GHz bands.

WLAN0 (2.4 GHz) AP Isolation/WLAN1 (5 GHz) AP Isolation

- *Isolation (Enabled/Disabled)* – enabling isolation in guest SSID;
- *AP Isolation* – selecting AP SSID, inside which isolation will be enabled.

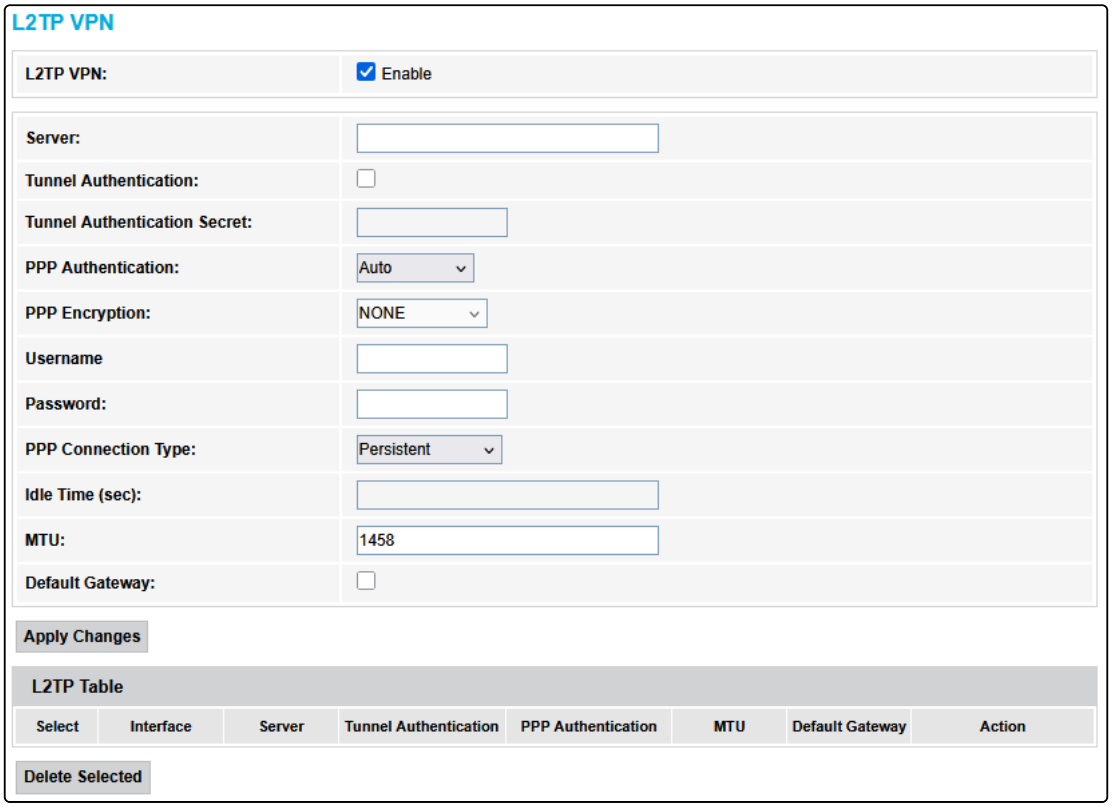
To save the changes, click the "Apply Changes" button.

5.4 The "VPN" menu. Virtual private network configuration

5.4.1 The "L2TP" submenu. L2TP VPN configuration

This section is used to configure the parameters of L2TP VPN virtual connection. L2TP protocol is used to create a secure communication channel over the Internet between the remote user's computer and the local computer.

VPN → L2TP



- *L2TP VPN* – mode in which access to the Internet is provided through a special channel, a tunnel, using L2TP. When "Enable" is checked, the following parameters become available for editing:
- *Server* – L2TP server address (domain name or IP address in IPv4 format);
- *Tunnel Authentication* – enable authentication;
- *Tunnel Authentication Secret* – authentication key;
- *PPP Authentication* – selection of connection authentication protocol used on L2TP server;
- *PPP Encryption* – selection of the data encryption protocol to be used (for CHAPMSv2 method only);
- *Username* – user name for authorization on L2TP server;
- *Password* – password for authorization on L2TP server;
- *PPP Connection Type* – connection type;
- *Idle Time (min)* – idle time in seconds, breaks inactive connection after specified time (only for dial-on-demand connection);
- *MTU* – maximum block size of data transmitted over the network (recommended value – 1462);
- *Default Gateway* – selecting whether or not the created L2TP tunnel will be the default gateway.

To save the changes click the "Apply Changes" button.

In the "L2TP Table" you can view the status of L2TP VPN virtual connection. To delete a certain entry, select a position and click "Delete Selected".

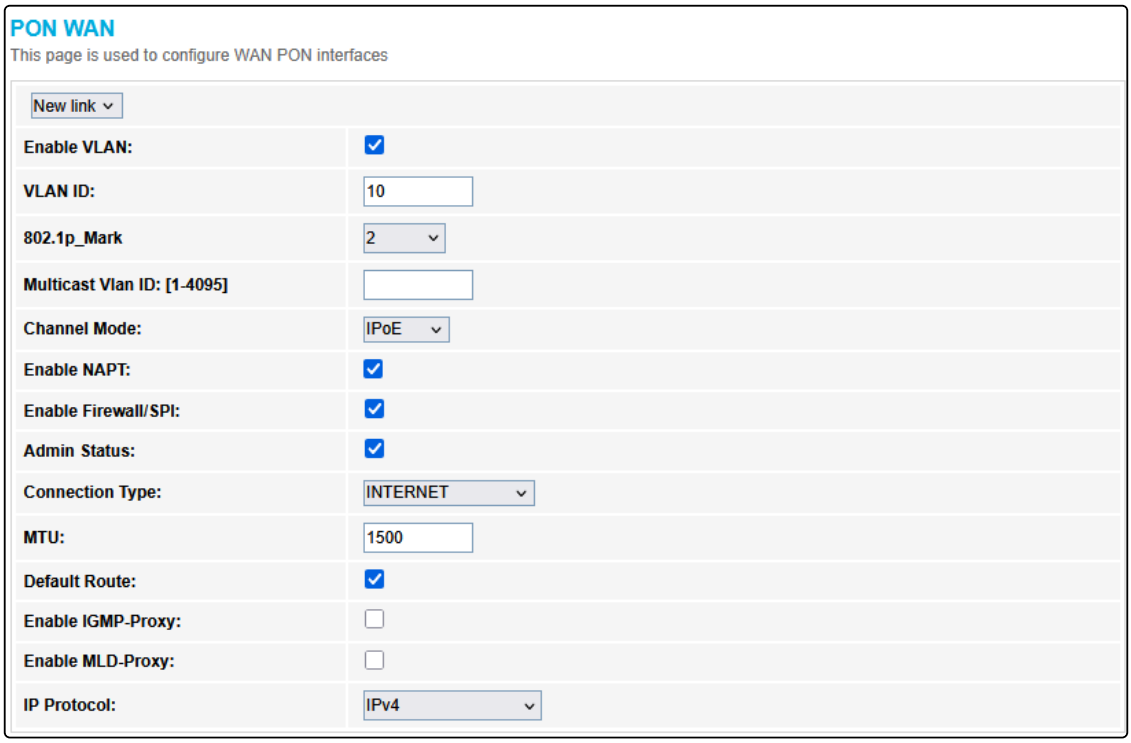
5.5 The "WAN" menu. Service configuration

5.5.1 The "WAN" submenu

5.5.1.1 The "PON WAN" submenu

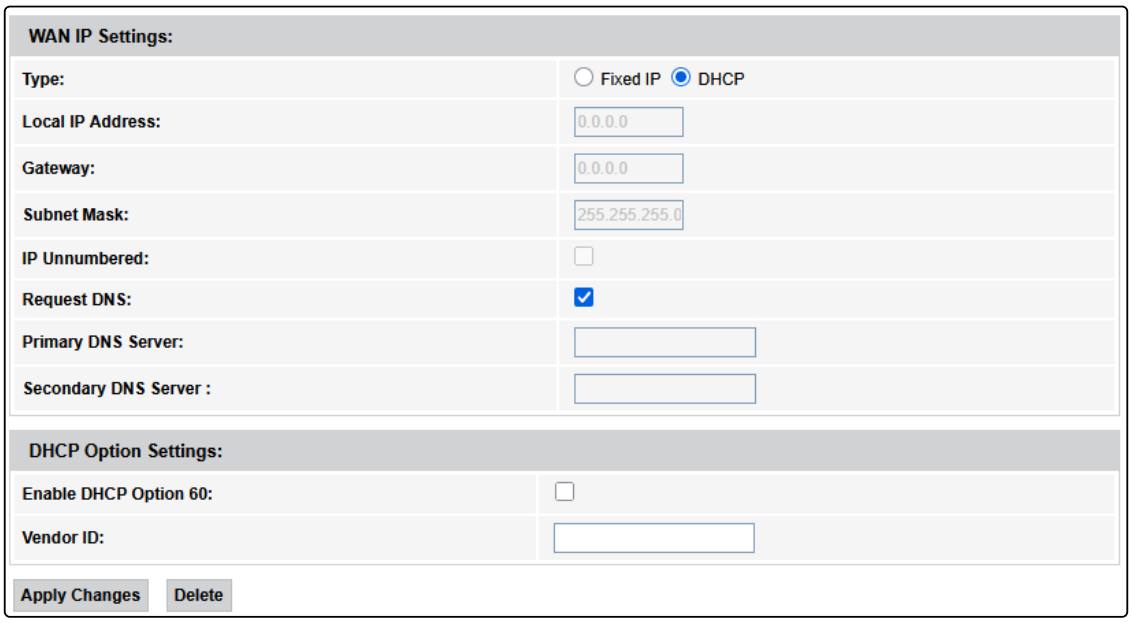
In this section you can configure the PON WAN parameters.

WAN → WAN → PON WAN



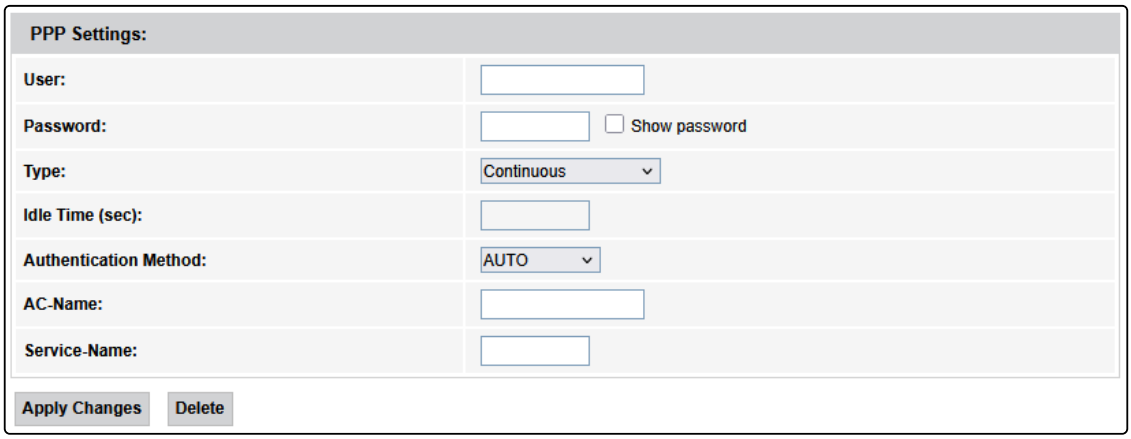
- *Enable VLAN* – enable VLAN usage;
- *VLAN ID* – VLAN identifier;
- *802.1p_Mark* – 802.1p priority;
- *Multicast VLAN ID [1-4095]* — selecting the VLAN number to be used for routing multicast traffic for this WAN;
- *Channel Mode* – VLAN interface operation mode;
  - *Bridged* – bridge;
  - *IPoE* – obtaining an address using DHCP;
  - *PPPoE* – setting point-to-point tunnel via Ethernet.
- *Enable NAPT* – enable NAPT function;
- *Enable Firewall/SPI* – enable firewall/SPI;
- *Admin Status* – enable/disable admin status;
- *Connection Type* – type of service provided on this WAN;
- *MTU* – the maximum packet size in bytes.
- *Default Route* – enable/disable the use of the selected interface as the default gateway;
- *Enable IGMP-Proxy* – enable snooping and forwarding of IGMP messages;
- *Enable MLD-Proxy* – enable tracking and broadcasting of MLD messages;
- *IP protocol* – selection of network protocols used for this WAN:
  - *IPv4* – mode of operation with network access over IPv4 only;
  - *IPv6* – mode of operation with network access over IPv6 only;
  - *IPv4/IPv6* – Dual Stack mode with network access over both IPv4 and IPv6.

IPoE channel mode



- *Type* – IP address assignment method (Fixed IP/DHCP);
- *Local IP Address* – local IP address;
- *Gateway* – address of the default gateway to which the packet is sent if no route is found for it in the routing table;
- *Subnet Mask* – external subnet mask;
- *IP Unnumbered* – enable the ability to obtain an IP address from an already configured interface;
- *Request DNS* – enable the setting to obtain DNS via ICMPv6/DHCPv6 automatically;
- *Primary DNS Server* – setting the address of the primary DNS server;
- *Secondary DNS Server* – setting the address of an additional DNS-server.

PPPoE channel mode



- *User* – the username for authorization on the PPPoE server;
- *Password* – the password for authorization;
- *Type* – select the type of PPPoE connection:
  - *Continuous* – the PPPoE session is permanently established;
  - *On Demand* – the PPPoE session is established when there is network activity and terminated when there is no activity due to timeout;
    - *Idle Time (sec)* – the time after which an inactive PPP connection will be terminated.
  - *Manual* – the PPPoE session is established manually.
- *Authentication Method* – the authentication method on the PPPoE server;
- *AC-Name* – the value of the Host-Uniq tag in the PADI message, which defines the name of the Access Concentrator (optional field).

- *Service Name* – the value of the Service Name tag in the PADI message (optional field).

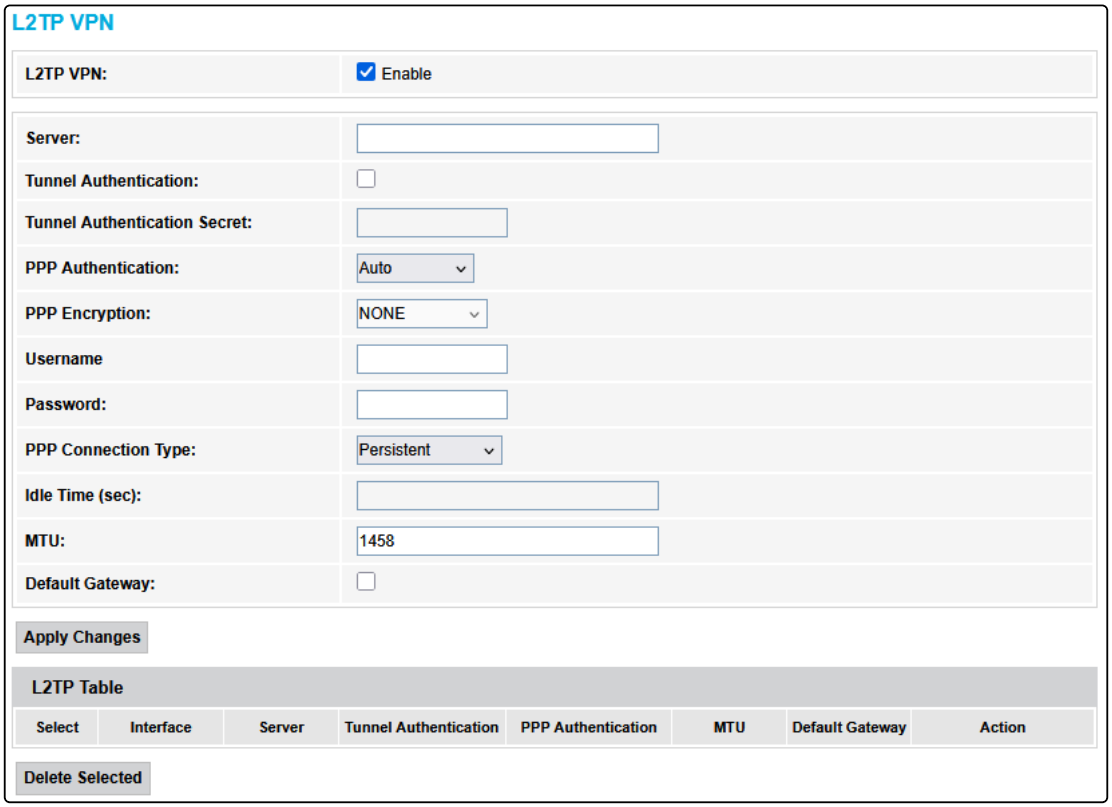
To save the changes, click the "Apply Changes" button, to cancel the changes, click the "Delete" button.

5.5.2 The "VPN" submenu. Virtual private network configuration

5.5.2.1 The "L2TP" submenu. L2TP VPN configuration

This section is used to configure the parameters of L2TP VPN virtual connection. L2TP protocol is used to create a secure communication channel over the Internet between the remote user's computer and the local computer.

WAN → VPN → L2TP



- *L2TP VPN* – mode in which access to the Internet is provided through a special channel, a tunnel, using L2TP. When "Enable" is checked, the following parameters become available for editing:
- *Server* – L2TP server address (domain name or IP address in IPv4 format);
- *Tunnel Authentication* – enable authentication;
- *Tunnel Authentication Secret* – authentication key;
- *PPP Authentication* – selection of connection authentication protocol used on L2TP server;
- *PPP Encryption* – selection of the data encryption protocol to be used (for CHAPMSv2 method only);
- *Username* – user name for authorization on L2TP server;
- *Password* – password for authorization on L2TP server;
- *PPP Connection Type* – connection type;
- *Idle Time (min)* – idle time in seconds, breaks inactive connection after specified time (only for dial-on-demand connection);
- *MTU* – maximum block size of data transmitted over the network (recommended value – 1462);
- *Default Gateway* – selecting whether or not the created L2TP tunnel will be the default gateway.

To save the changes click the "Apply Changes" button.

In the "L2TP Table" you can view the status of L2TP VPN virtual connection. To delete a certain entry, select a position and click "Delete Selected".

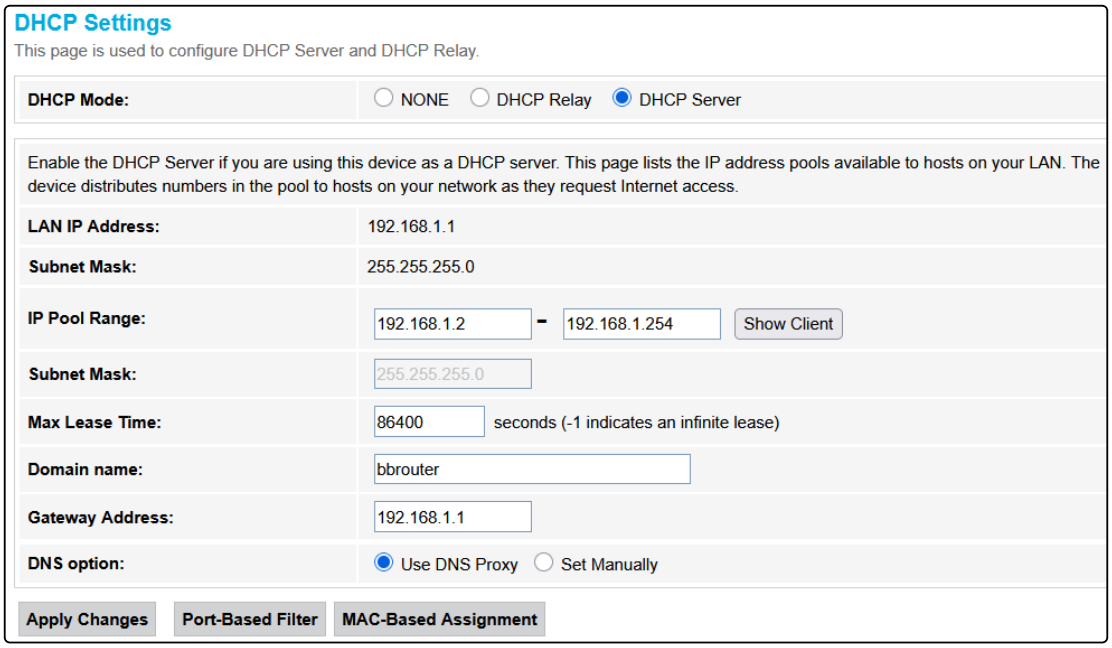
5.6 The "Services" menu. Service configuration

5.6.1 The "Service" submenu

5.6.1.1 The "DHCP" submenu. DHCP configuration

The menu allows DHCP server and DHCP repeater configuration.

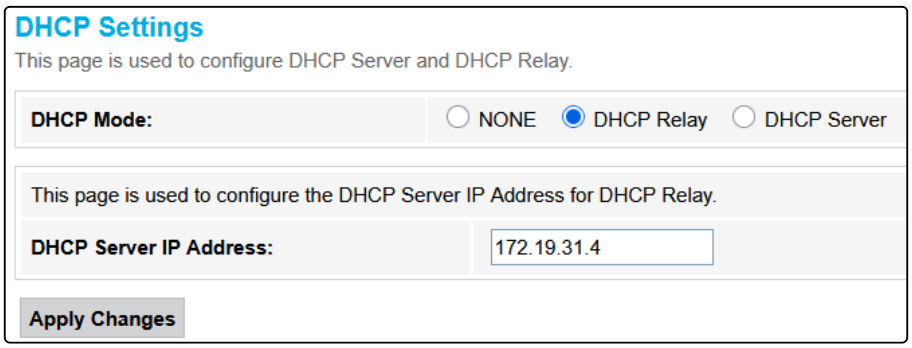
Services → Service → DHCP (DHCP Server mode)



- *DHCP Mode* – select operation mode:
  - *NONE* – DHCP disabled;
  - *DHCP Relay* – operation in DHCP repeater mode;
  - *DHCP Server* – operation in DHCP server mode.
- *IP Pool Range* – range of addresses distributed among clients;
- *Show Client* – button to view clients who leased the addresses. When clicking, a table with information about DHCP clients leased by a DHCP server is displayed;
- *Max Lease Time* – maximum lease time, -1 for endless lease;
- *Domain name* – domain name;
- *Gateway Address* – gateway address;
- *DNS option* – defines DNS operation:
  - *Use DNS relay* – ONT address will be returned as DNS and all queries will be relayed via ONT;
  - *Set manually* – set DNS manually.

Click "Show Client" to see the table with information on DHCP clients, that lease the DHCP server.

Services → Service → DHCP (DHCP Relay mode)



- *DHCP Server IP Address* – IP address of the remote DHCP server.

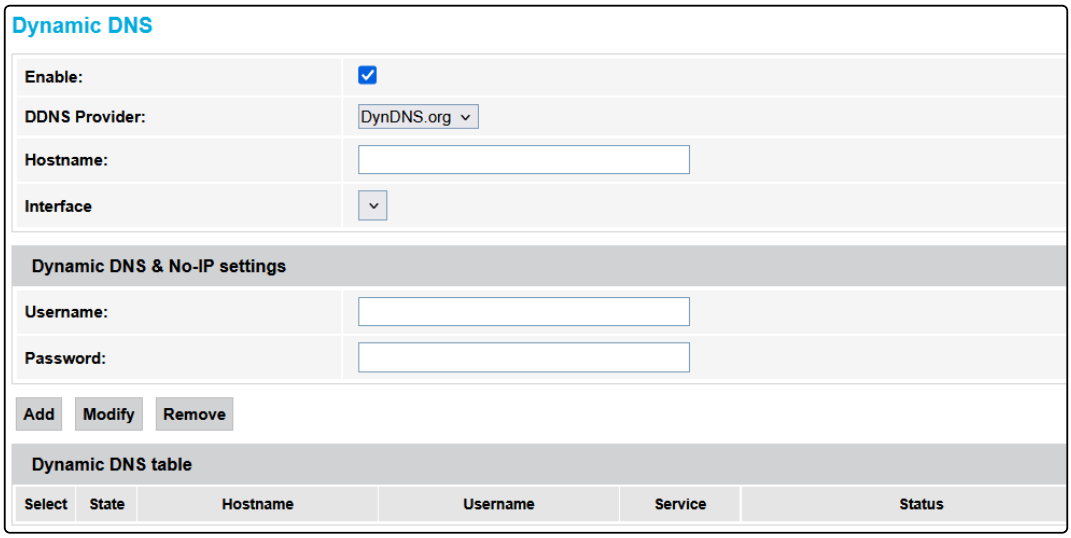
To save the changes, click the "Apply Changes" button. "Port-Based Filter" and "MAC-Based Assignment" buttons allow configuring port-based and MAC-based filtering, respectively.

5.6.1.2 The "Dynamic DNS" submenu. Dynamic DNS Configuration

Dynamic DNS (domain name system) allows information to be updated on DNS server in real time and (optionally) automatically. It is applied for assignment of a constant domain name to a device (computer, router, e. g. NTP-RG) having a dynamic IP address. The IP address can be assigned by IPCP in PPP connections or in DHCP.

Dynamic DNS is frequently used in local networks where clients are obtaining IP addresses through DHCP and then are registering their names on a local DNS server.

Services → Service → Dynamic DNS



- *Enable* – when selected, enable DHCP server (IP addresses from the following range will be dynamically assigned to network devices);
- *DDNS Provider* – select the type of D-DNS service (provider): org, TZO.com, No-IP.com;
- *Custom* – another provider selected by user. In this case, you need to specify the provider's name (*Hostname*) and address (*Interface*).

***Dynamic DNS & No-IP settings*:**

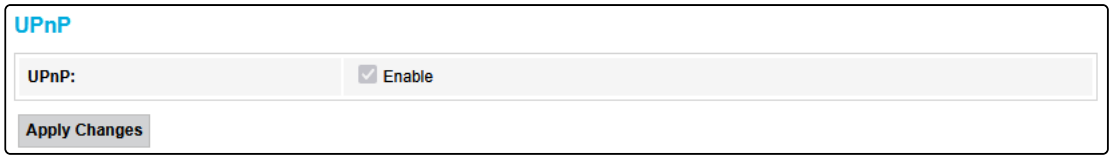
- *UserName* – user name;
- *Password* – authorization password on the service selected for operation with D-DNS.

"Dynamic DNS table" table with the list of available DNS displayed in this section. To add a record, click the "Add" button. To remove/modify a record, click the "Remove"/"Modify" button for the selected record.

5.6.1.3 The "UPnP" submenu. Automated Setup of Network Devices

In this section you can configure Universal Plug and Play (UPnP™) function. UPnP ensures compatibility with network equipment, software and peripheral devices.

Services → Service → UPnP



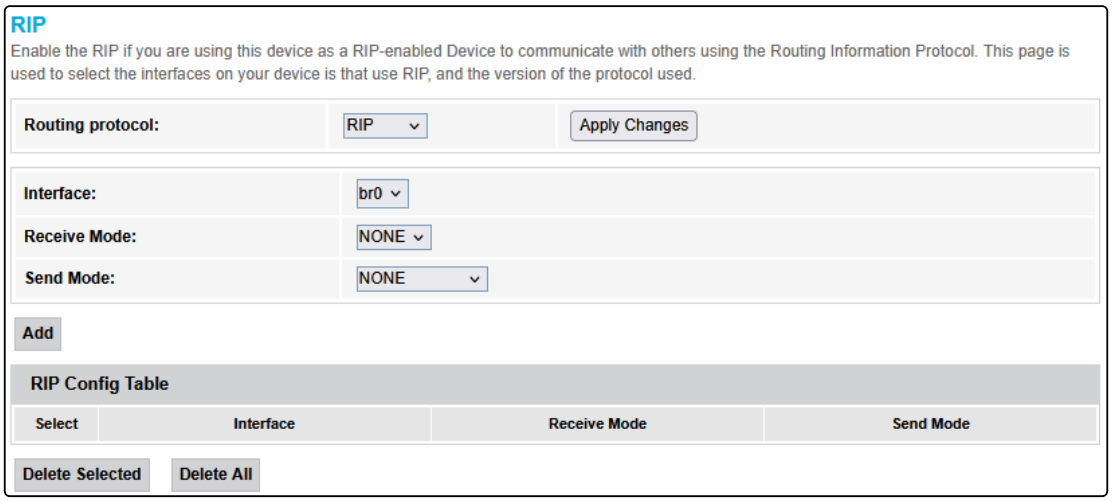
- *UPnP (Enable/Disable)* – enable/disable the UPnP function.

To save the settings, click the "Apply Changes" button.

5.6.1.4 The "RIP" submenu. Dynamic routing configuration

This section is used to select the interfaces on your device is that use RIP, and the version of the protocol used. Enable the RIP if you are using this device as a RIP-enabled Device to communicate with others using the Routing Information Protocol.

Services → Service → RIP



- *Routing protocol* – enable/disable the use of dynamic routing protocol RIP.

To accept and save the settings, click the "Apply Changes" button.

- *Interface* – interface on which RIP will be started;
- *Receive Mode* – incoming packets processing mode (NONE, RIP1, RIP2, both);
- *Send Mode* – sending mode (NONE, RIP1, RIP2, RIP1 COMPAT).

Interfaces with the support for RIP are displayed in the *"RIP Config Table"*. To delete all entries in the table click the "Delete All" button; to delete one position from the list select it and click "Delete Selected".

5.6.1.5 The "DLNA" submenu

DLNA (Digital Living Network Alliance) is a set of standards that allow compatible devices to transmit and receive various media content (images, music, video) over a home network, as well as display it in real time. That is, it is a technology for connecting home computers, mobile phones, laptops and household electronics into a single digital network. Devices that support the DLNA specification can be configured and connected to the network automatically at the user's discretion.

The media content transmission environment is usually a home local network (IP network). Connecting DLNA-compatible devices to a home network can be either wired (Ethernet) or wireless (Wi-Fi).

Services → Service → DLNA

- *Digital Media Server (enable/disable)* – when selected, the media server is enabled.

To save the settings, click the "Apply Changes" button.

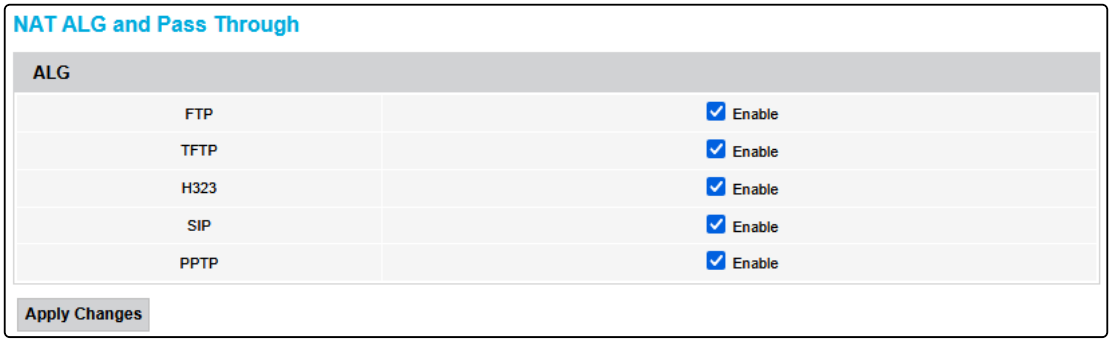
5.6.2 The "Firewall" submenu. Firewall configuration

5.6.2.1 The "ALG" submenu

This section is used to enable/disable ALG services.

Application-level gateway (ALG) – NAT router component that understands an application protocol, and when packets of that protocol pass through it, modifies them so that users behind the NAT can use the protocol.

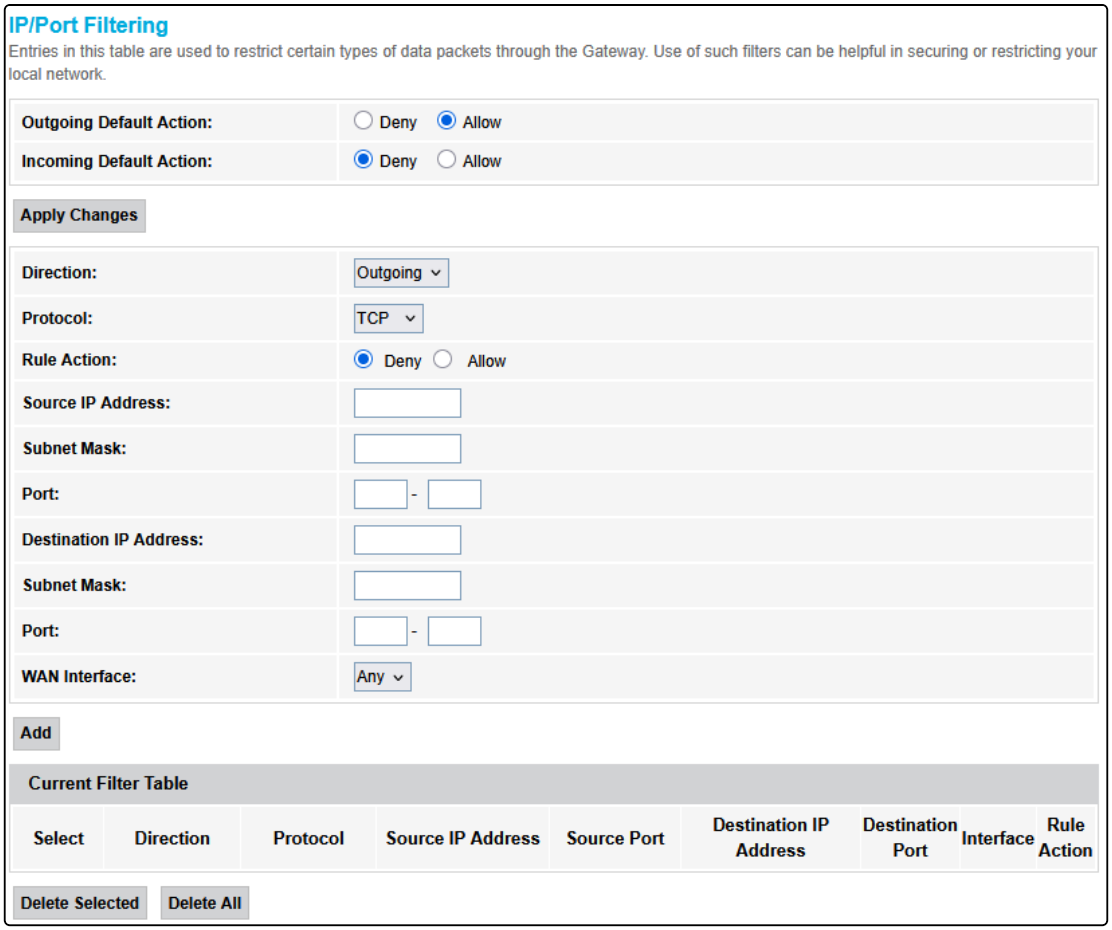
Services → Firewall → ALG



5.6.2.2 The "IP/Port Filtering" submenu. Address Filtering Settings

This section is used to configure address filtering. The IP Filtering function filters router traffic by IP addresses and ports.Using these filters can be useful to protect or restrict the local network.

Services → Firewall → IP/Port Filtering



Default

- *Incoming Default Action (Deny / Allow)* – filtering for incoming packets;
- *Outgoing Default Action (Deny / Allow)* – filtering for outgoing packets.

To save the changes, click the "Apply Changes" button.

To add a filter, fill in the appropriate fields and click the "Add" button:

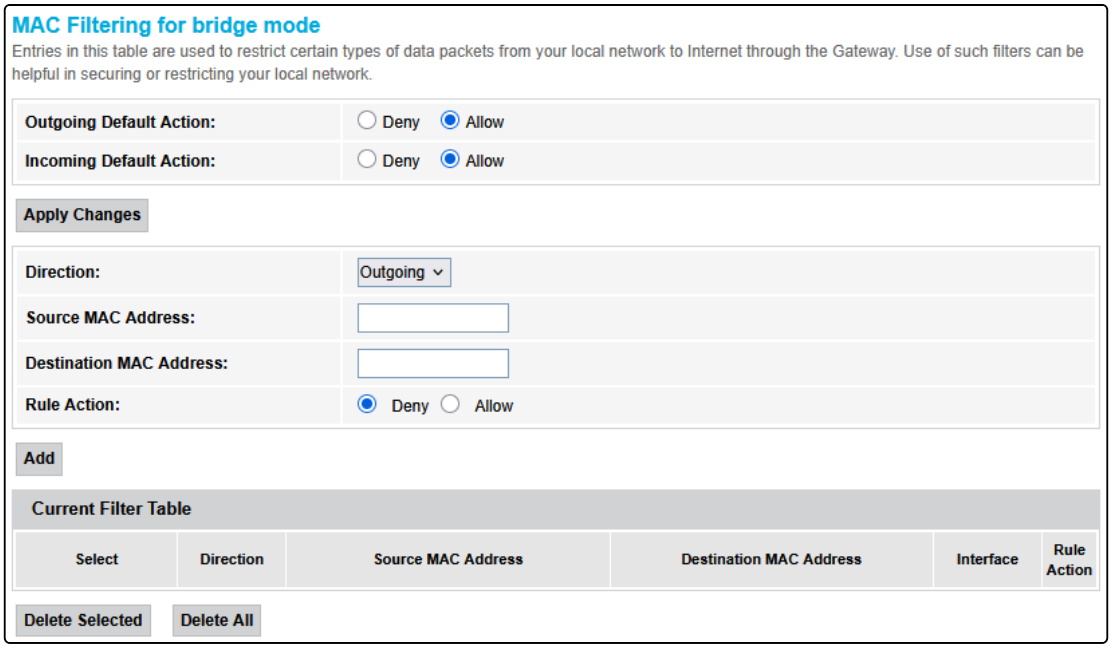
- *Direction* – packet direction;
- *Protocol* – filtering protocol;
- *Rule Action (Deny / Allow)* – packet processing policy (deny/allow);
- *Source IP Address* – source IP address:
  - *Subnet mask* – source subnet mask;
  - *Port* – source port.
- *Destination IP Address* – destination IP address:
  - *Subnet mask* – destination subnet mask;
  - *Port* – destination port.
- *WAN Interface* – ingress interface.

Added filters are displayed in the *"Current Filter Table"* located below. The entries in this table are used to restrict certain types of data packets pass through the gateway. To delete a specific filter, select the position and click the "Delete selected" button, to delete all filters click "Delete All".

5.6.2.3 The "MAC Filtering" submenu. Filtering Settings for MAC Addresses

MAC filtration allows traffic to be forwarded or blocked depending on source and destination MAC addresses. To change the mode click the "Apply Changes" button.

Services → Firewall → MAC Filtering



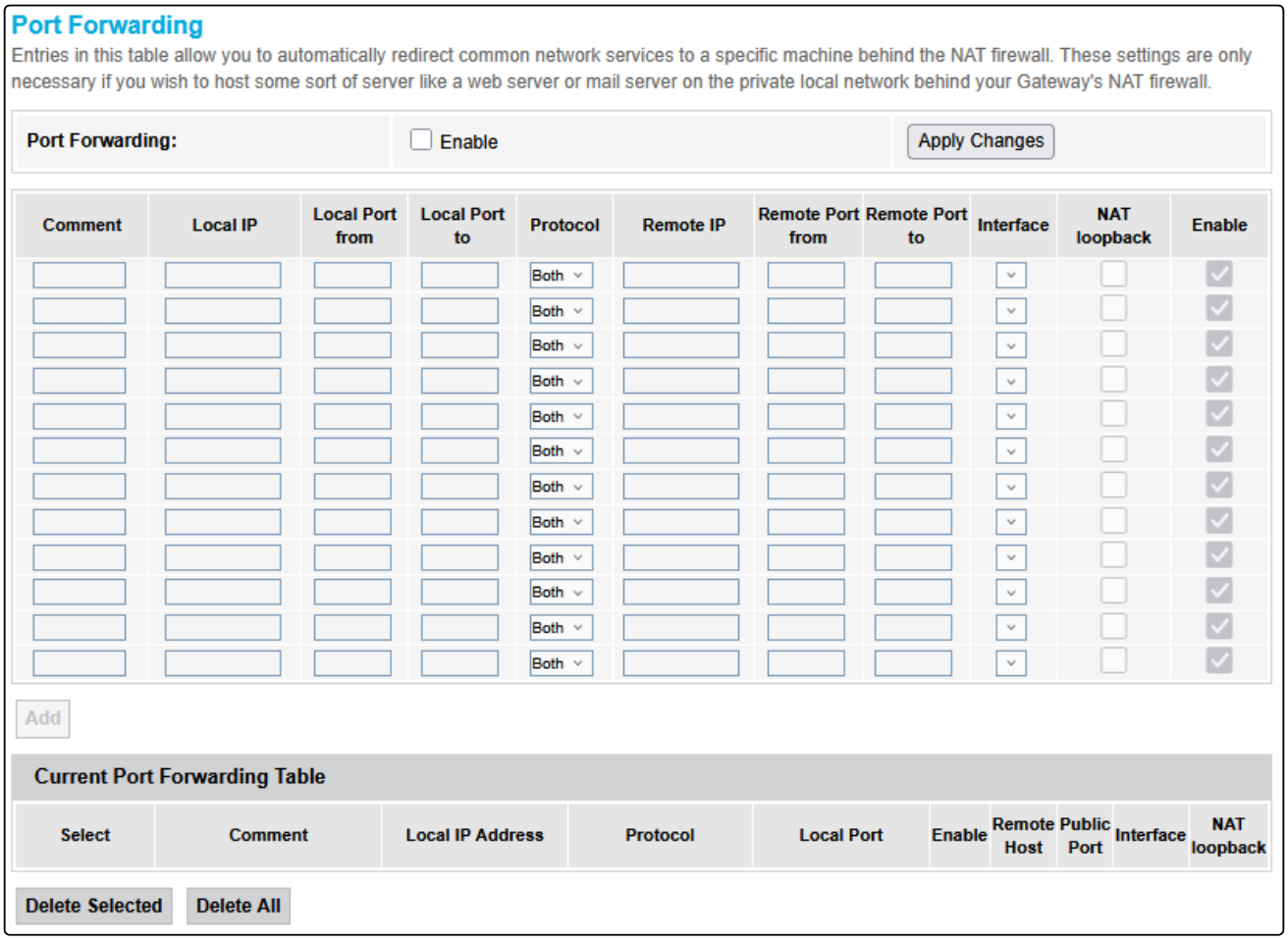
- *Incoming Default Action (Deny / Allow)* – filtering for incoming packets;
- *Outgoing Default Action (Deny / Allow)* – filtering for outgoing packets;
- *Source MAC Address* – MAC address for which limitation/access should be imposed;
- *Destination MAC Address* – MAC address for which limitation/access should be imposed.

Added filters are displayed in the *"Current Filter Table"* located below. The *"Rule"* field displays the type of created rule (*"Allow" – allowing* or *"Deny" – forbidding*). To delete a specific filter, select the position and click the "Delete selected" button, to delete all filters click "Delete All".

5.6.2.4 *The "Port Forwarding" submenu. Port forwarding configuration*

"Current Port Forwarding Table" with port forwarding information is displayed in this section. Entries in this table allow you to automatically redirect common network services to a specific machine behind the NAT firewall. These settings are only necessary if you wish to host some sort of server like a web server or mail server on the private local network behind your router's NAT firewall. To save the changes, click the "Apply Changes" button.

Services → Firewall → Port Forwarding



To add the entry in the *"Current Port Forwarding Table"* check the *Enable* flag and fill in the corresponding fields:

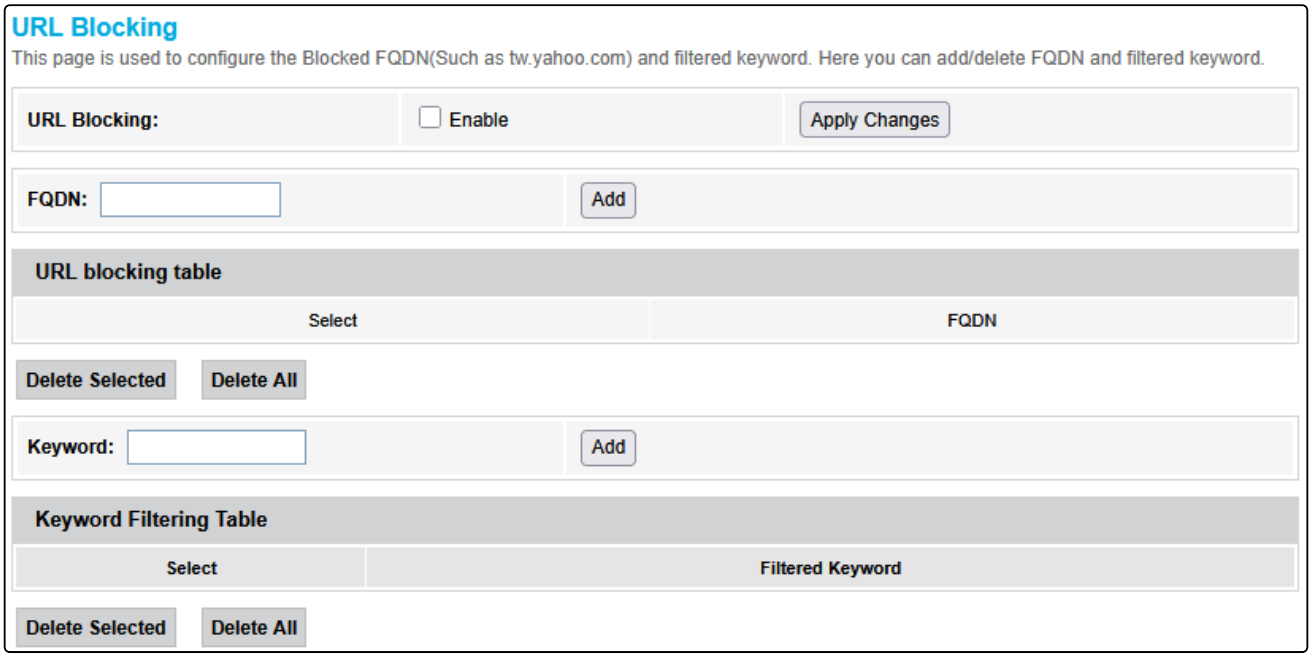
- *Port Forwarding (Enable/Disable)* – enable/disable port forwarding feature;
- *Application* – this menu has pre-settings for various applications port forwarding;
- *Comment* – comment;
- *Local IP* – local IP address to which forwarding is performed;
- *Local port from/to* – specify the range of local device ports for forwarding;
- *Protocol* – select protocol (TCP, UDP or both);
- *Remote IP* – remote IP address from which forwarding is performed;
- *Remote port from/to* – specify the initial port of incoming connection. The *"Remote port to"* field will be filled automatically;
- *Interface* – select interface;
- *NAT-loopback* – NAT loop allows transferring queries from LAN to the router, thus, for example, you can check the work of rules created;
- *Enable* – enabling the selected forwarding.

After filling the fields click the "Add" button to add the entry. To delete a selected position, click the "Delete Selected" button; to delete the whole table, click the "Delete All" button.

5.6.2.5 The "URL Blocking" submenu. Internet access restriction configuration

URL filter performs complete analysis and provides access control to specific Internet resources. This section sets and displays a list of forbidden/allowed URLs to visit. Here you can add the forbidden/allowed FQDN (Fully Qualified Domain Name) with the "Add" button, filtering by keywords is also possible. The added restrictions are displayed in the *"URL Blocking Table"* and the *"Keyword Filtering Table"*. To remove a specific URL or keyword from the table, click on it and then on the "Delete Selected" button. To delete all restrictions click the "Delete All" button.

Services → Firewall → URL Blocking



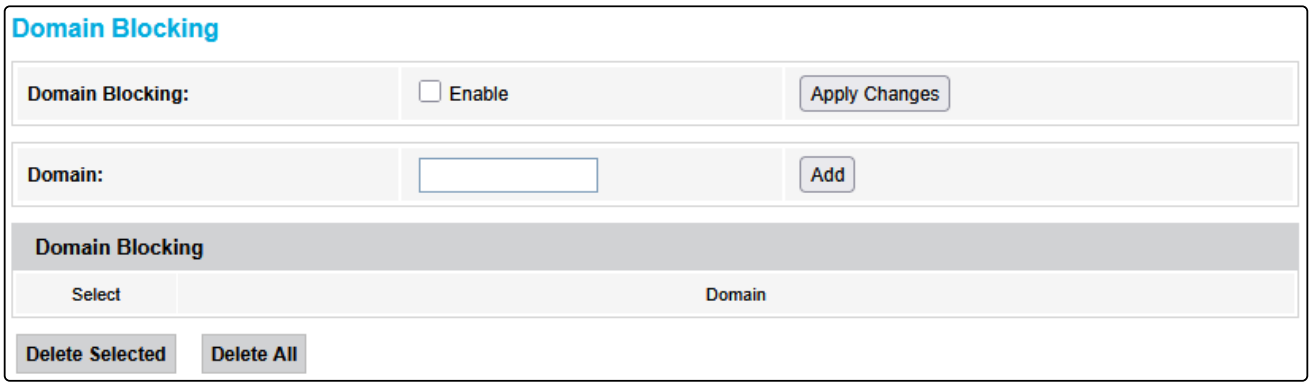
- *URL Blocking (Enable/Disable)* – enable/disable URL Blocking operation;
- *FQDN* – Fully Qualified Domain Name;
- *Keyword* – keyword.

To save the changes, click the "Apply Changes" button.

5.6.2.6 The "Domain Blocking" submenu. Domain blocking configuration

This section is used to set domain blocking.

Services → Firewall → Domain Blocking



To block the domain check *Enable*, fill the *Domain* field and click the "Add" button

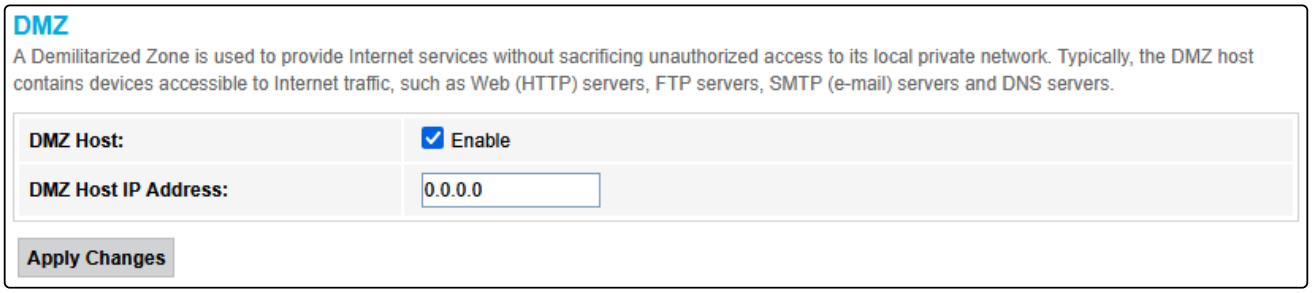
- *Domain Blocking (Enable/Disable)* – enable/disable blocking;
- *Domain* – domain name.

To save the changes, click the "Apply Changes" button. All blocked domains are listed in the *"Domain Blocking"* table, to remove a blocking for one domain, select it and click the "Delete Selected" button, to remove all restrictions, click the "Delete All" button.

5.6.2.7 The "DMZ" submenu. Demilitarized Zone configuration

When an IP address is set in the *"DMZ host IP address field"*, all requests from external network, that do not satisfy the *"Port Forwarding"* rules, will be redirected to a DMZ host (a trusted host with the specified address in the local network).

Services → Firewall → DMZ



- *DMZ Host (Enable/Disable)* – enable/disable the host;
- *DMZ Host IP Address* – IP address.

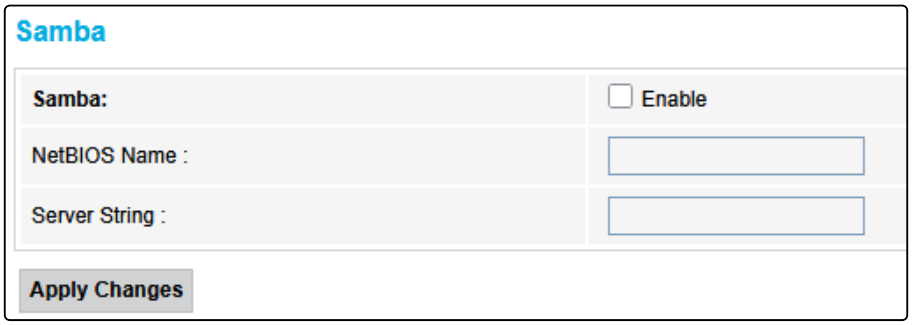
To save the changes, click the "Apply Changes" button.

5.6.3 The "Samba" submenu

5.6.3.1 The "Configuration" submenu. Configuration of Samba

In this submenu you can configure Samba users.

Services → Samba → Configuration



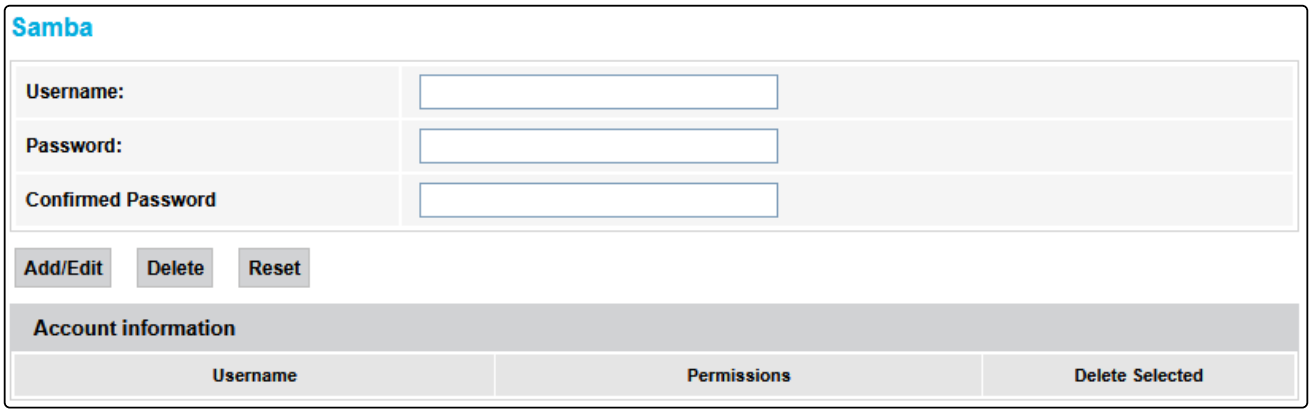
- *Samba Enable/Disable* – enable/disable Samba configuration;
- *NetBIOS Name* – domain name when identifying in a local network;
- *Server String* – server name.

To save the changes, click the "Apply Changes" button.

5.6.3.2 *The "Accounts" submenu*

In the *"Accounts"* section you can create personal Samba accounts.

Services → Samba → Account



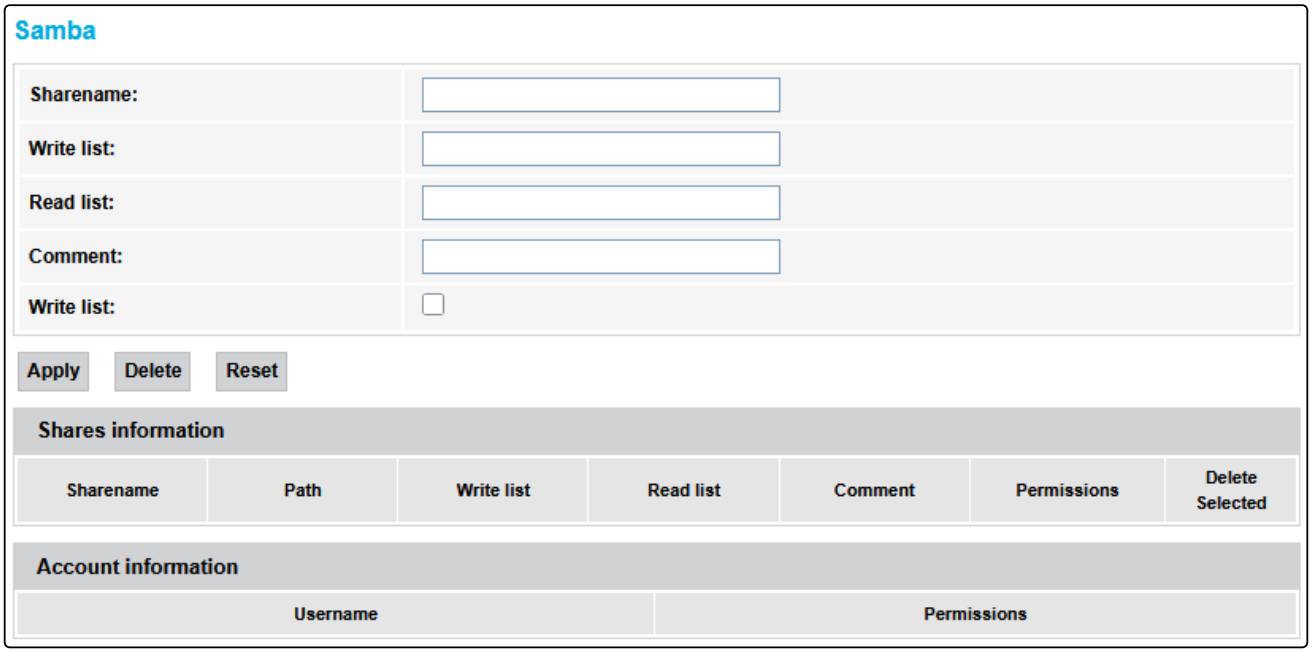
- *Username* – account name;
- *New password* – password;
- *Confirmed Password* – password confirmation.

The section displays the "Account information" table with a list of existing accounts. To add or edit an entry, click the "Add/Edit" button. To delete an item, select it and click "Delete". To clear the filled fields, click the "Reset" button.

5.6.3.3 *The "Shares" submenu*

The *"Shares"* section is used to add Samba library.

Services → Samba → Shares



- *Sharename* – library name;
- *Write list* – list of accounts who can change files in the library;
- *Read list* – list of accounts who can read files in the library;
- *Comment* – comment for the library;
- *Write list* – when selected, the library is available for reading only.

5.7 The "VoIP" menu. IP telephony settings

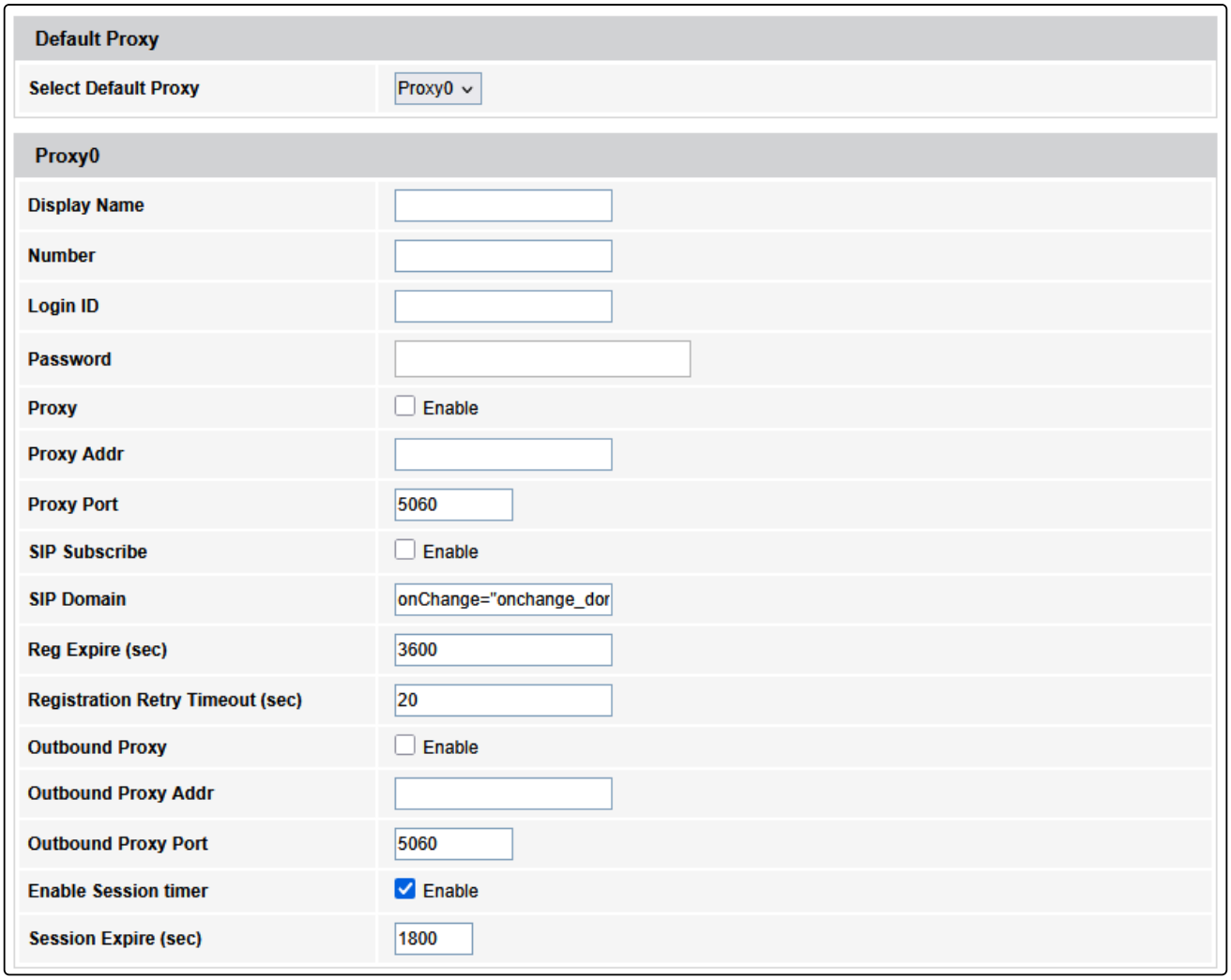
⚠ For NTU-RG-5521G-Wax only.

5.7.1 The "VoIP" submenu

5.7.1.1 The "Port" submenu

5.7.1.1.1 Proxy

VoIP → VoIP → Port1 → Proxy



Default Proxy

- *Select Default Proxy* – selection of a proxy to be used by default.

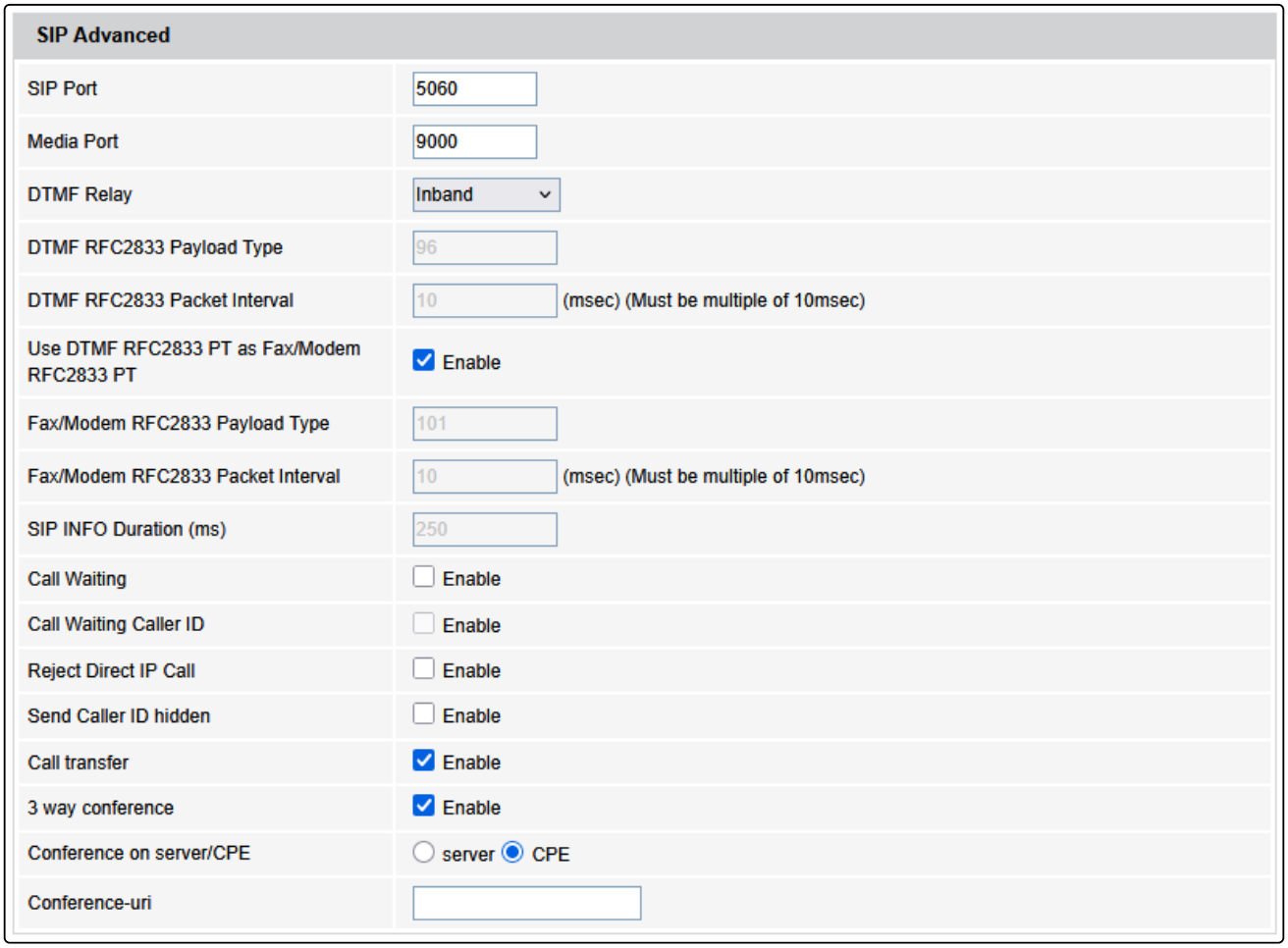
Proxy

- *Display Name* – displayed account name;
- *Number* – number;
- *Login ID* – login;
- *Password* – password;
- *Proxy* – enable server use for forwarding outgoing calls;

- *Proxy Addr* – SIP server address;
- *Proxy Port* – SIP port;
- *SIP Subscribe* – subscription to receive event notifications;
- *SIP Domain* – SIP domain name;
- *Reg Expire, (sec)* – registration time, (s);
- *Registration Retry Timeout (sec)* – registration timeout;
- *Outbound Proxy* – enable server use for forwarding outgoing calls;
- *Outbound Proxy Addr* – forwarding server address;
- *Outbound Proxy Port* – forwarding server port;
- *Enable Session timer* – enable session timer;
- *Session Expire* (sec) – session length.

5.7.1.1.2 SIP Advanced

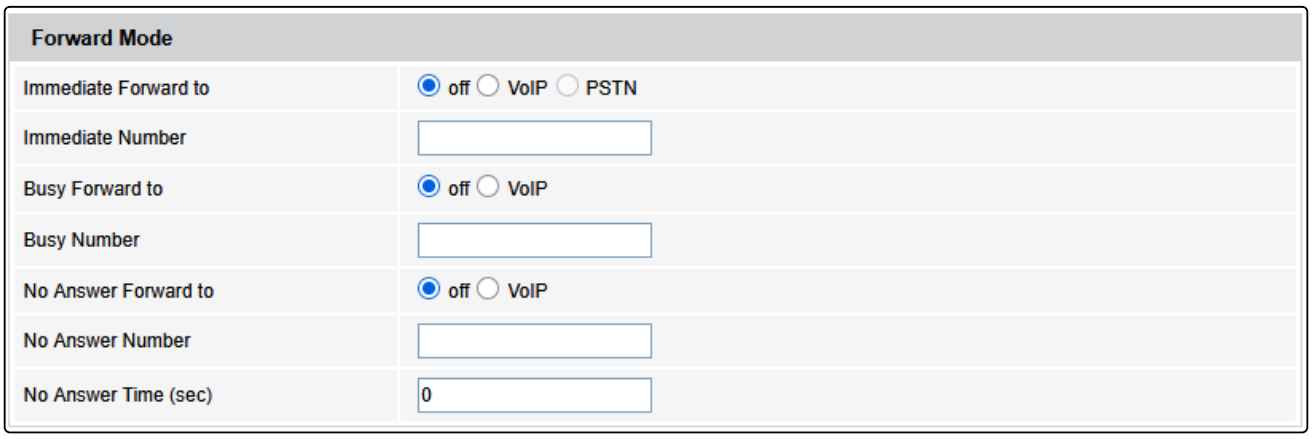
VoIP → VoIP → Port1 → SIP Advanced



- *SIP Port* – port used for SIP operation;
- *Media Port* – port for transmission of voice traffic;
- *DTMF Relay* – DTMF transmission method;
- *DTMF RFC2833 Payload Type* – type of positive load in DTMF;
- *DTMF RFC2833 Packet Interval* – transmission interval (multiple of 10 ms);
- *Use DTMF RFC2833 PT as Fax/Modem RFC2833 PT* – enable the use of DTMF2833 PT for fax transmission;
- *Fax/Modem RFC2833 Payload Type* – load type for Fax/Modem RFC2833;
- *Fax/Modem RFC2833 Packet Interval* – Fax/Modem RFC2833 packets transmission interval (multiple of 10 ms);
- *SIP INFO Duration (ms)* – SIP INFO message duration;
- *Call Waiting* – enable call waiting;
- *Call Waiting Caller ID* – enable display of Caller ID during call waiting;
- *Reject Direct IP Call* – enable rejection of direct IP call;
- *Send Caller ID hidden* – enable hiding Caller ID;
- *Call transfer* – enable call transfer;
- *3 way conference* – enable 3-way conference;
- *Conference on server/CPE* – conference organization selection: on CPE or server;
- *Conference-uri* – conference server address.

5.7.1.1.3 Forward Mode

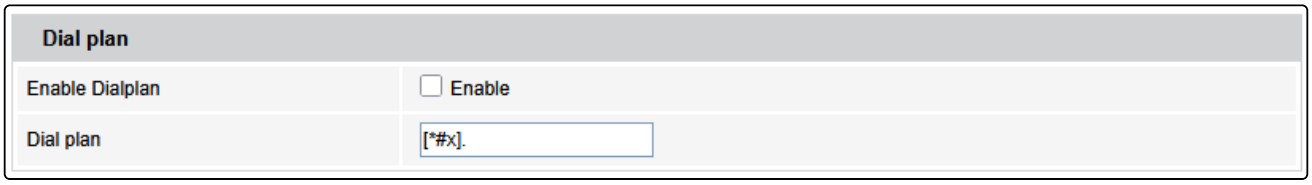
VoIP → VoIP → Port1 → Forward Mode



- *Immediate Forward to* – activation of unconditional forwarding;
- *Immediate Number* – number to which unconditional forwarding will be carried out;
- *Busy Forward to* – busy call forwarding activation;
- *Busy Number* – number to which call forwarding will be carried out when the line is busy;
- *No Answer Forward to* – activation of call forwarding on no answer;
- *No Answer Number* – number to which call forwarding on no answer will be carried out;
- *No Answer Time, (sec)* – no answer time until call forwarding is triggered, (s).

5.7.1.1.4 Dial plan

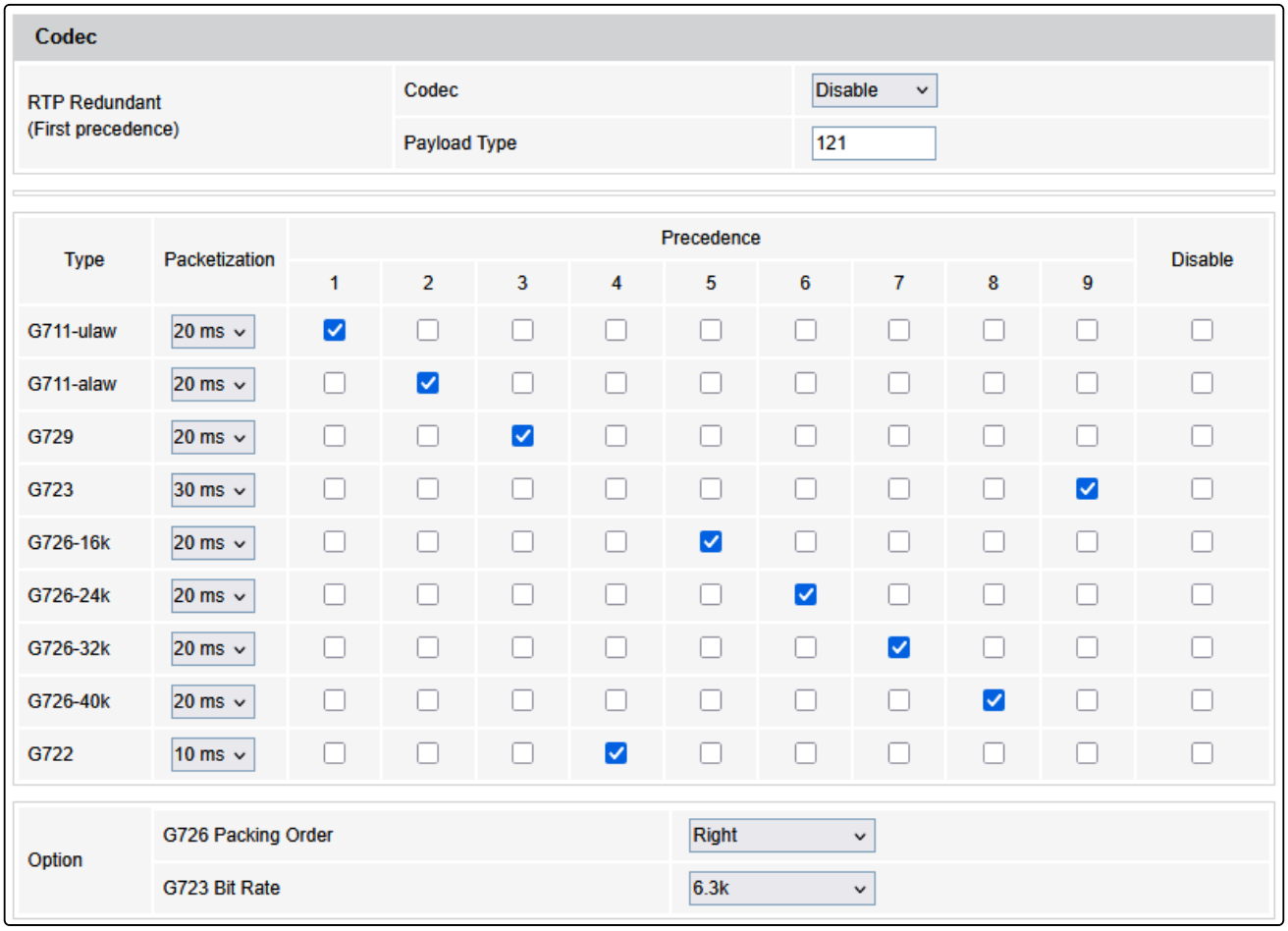
VoIP → VoIP → Port1 → Dial plan



- *Enable Dialplan (on/off)* – enable/disable dialplan;
- *Dial plan* – dialplan itself.

5.7.1.1.5 Codec

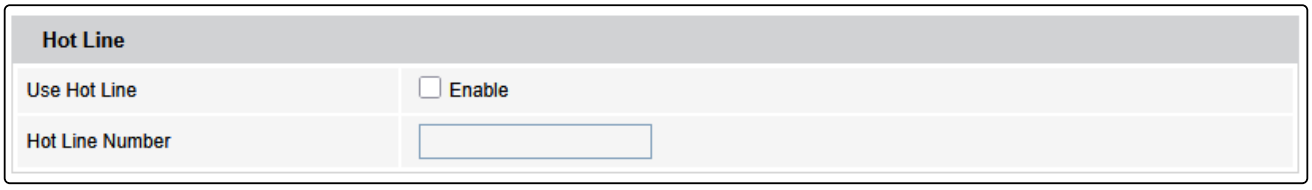
VoIP → VoIP → Port1 → Codec



- *RTP Redundant Codec (First precedence)* – select redundant codec;
- *Payload Type* – positive load type;
- *Type* – codec type;
- *Packetization* – select packetization time;
- *Precedence* – select codec priority;
- *Disable* – disable codecs;
- *Option G726 Packing Order* – select option G726 order;
- *Option G723 Bit Rate* – select G723 speed.

5.7.1.1.6 Hot line

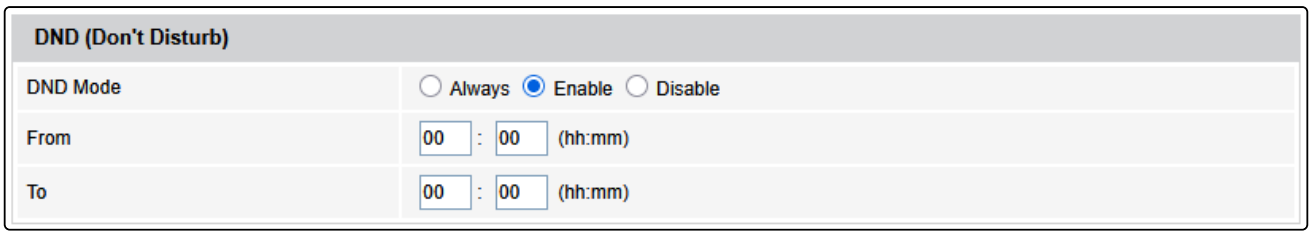
VoIP → VoIP → Port1 → Hot Line



- *Use Hot Line* – enable use of hotline;
- *Hot Line Number* – hotline number.

5.7.1.1.7 DND (Don't Disturb)

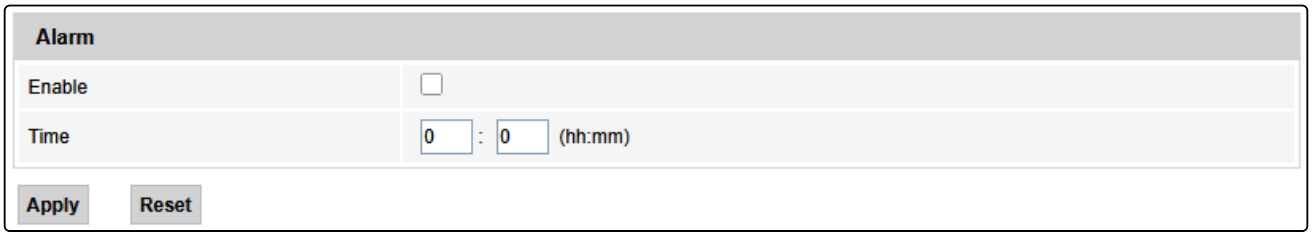
VoIP → VoIP → Port1 → DND (Don't Disturb)



- *DND Mode* – activation of the Do Not Disturb service;
- *From; To* – Do Not Disturb service time.

5.7.1.1.8 Alarm

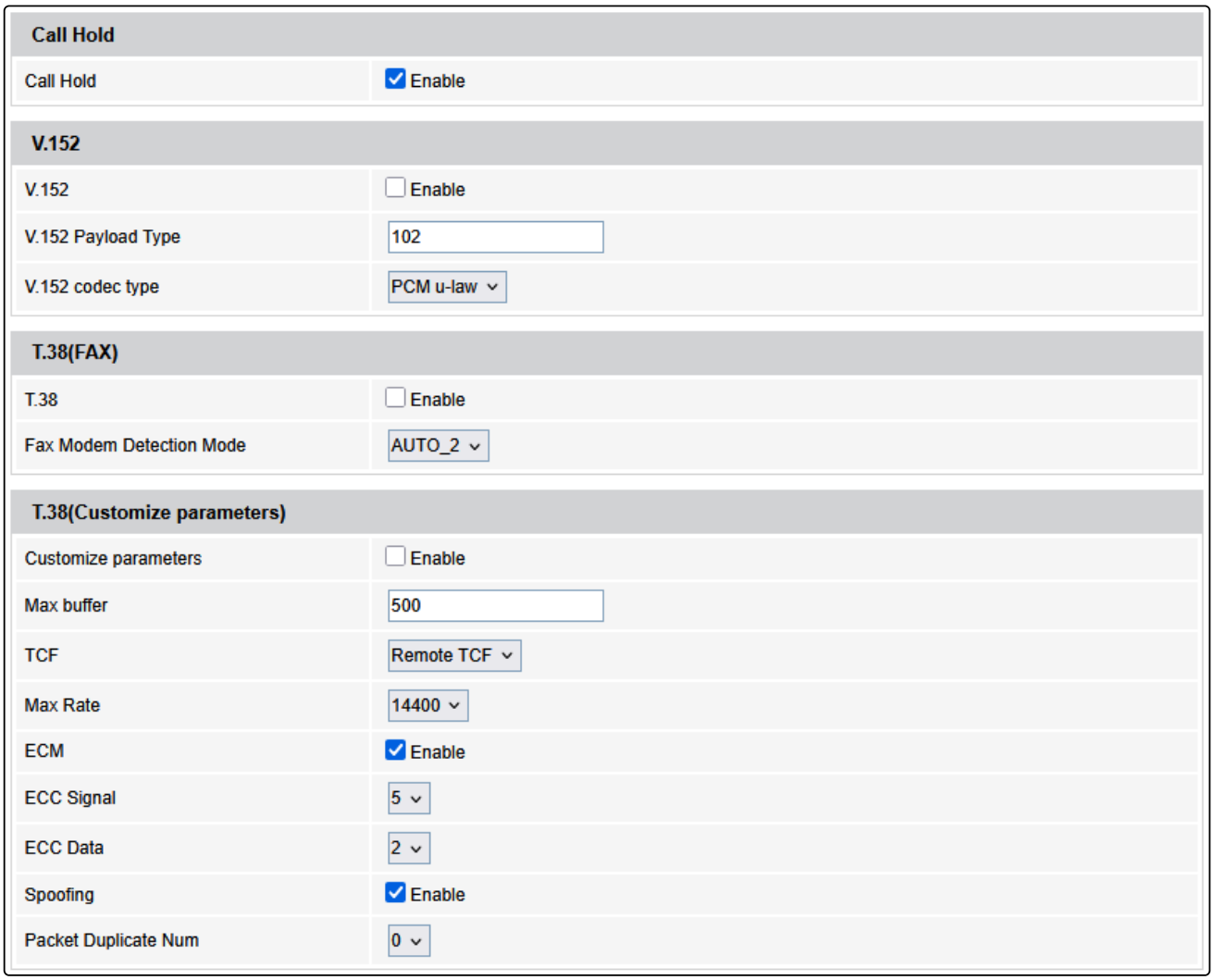
VoIP → VoIP → Port1 → Alarm



- *Enable* – activation of the Value-Added Service "alarm";
- *Time* – set "alarm" time.

5.7.1.2 The "Advance" submenu. Advanced VoIP settings

VoIP → VoIP → Advance



Call Hold

- *Call Hold* – enable the service.

V.152

- *152 Enable* – enable support for V.152;
- *152 Payload Type* – positive load type;
- *152 codec type* – select codec type.

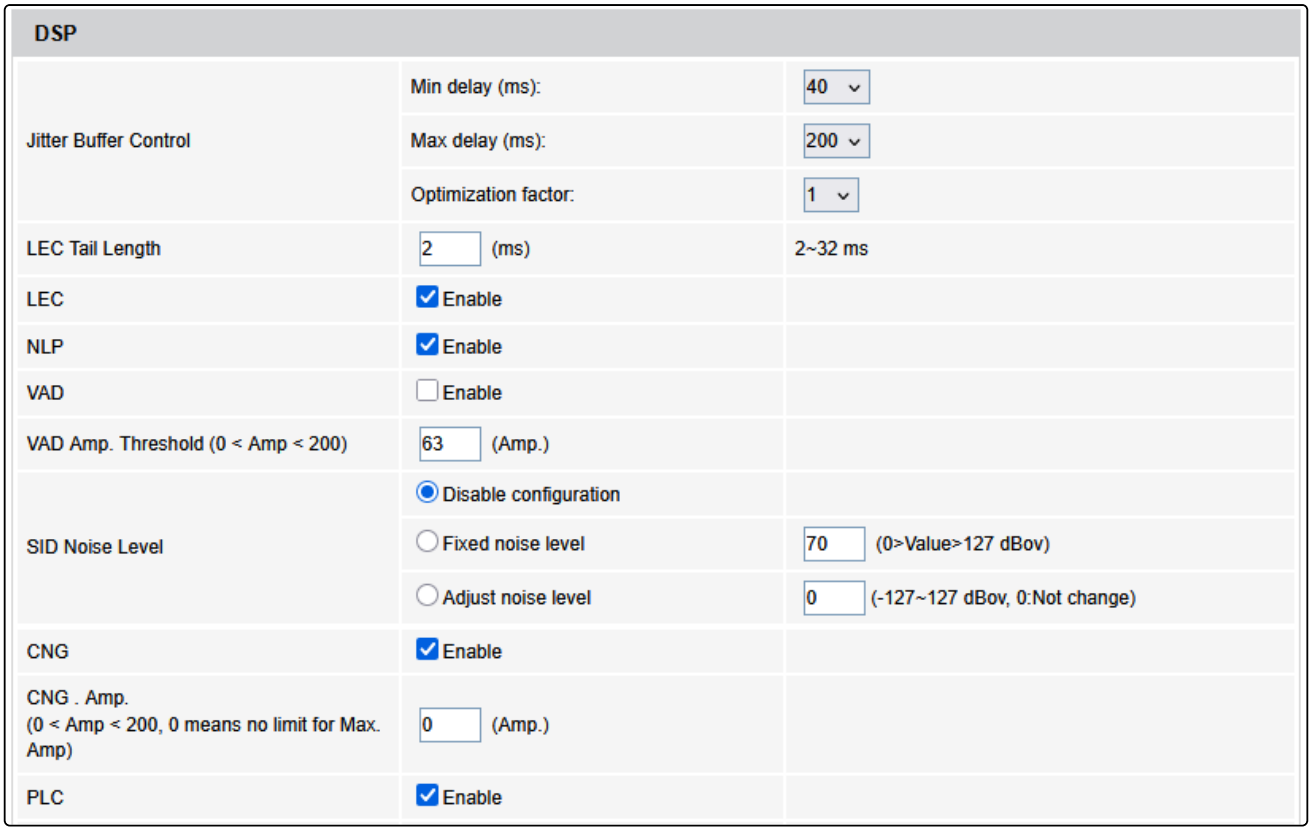
T.38(FAX)

- *T38* – enable protocol T.38 (Fax);
- *Fax Modem Detection Mode* – select fax detection mode.

T.38 (Customize parameters)

- *Customize parameters* – enable the use of arbitrary parameters for T.38;
- *Max buffer* – maximum buffer size;
- *TCF* – select starting frame;
- *Max Rate* – select maximum speed;
- *ECM* – enable error correction;
- *ECC Signal* – select correction signal;

- *ECC Data* – corrected data;
- *Spoofing* – spoofing;
- *Packet Duplicate Num* – select number of ports.



DSP		
Jitter Buffer Control	Min delay (ms):	40
	Max delay (ms):	200
	Optimization factor:	1
LEC Tail Length	2 (ms)	2~32 ms
LEC	Enable	
NLP	Enable	
VAD	Enable	
VAD Amp. Threshold (0 < Amp < 200)	63 (Amp.)	
SID Noise Level	Disable configuration	
	Fixed noise level	70 (0>Value>127 dBov)
	Adjust noise level	0 (-127~127 dBov, 0:Not change)
CNG	Enable	
CNG . Amp. (0 < Amp < 200, 0 means no limit for Max. Amp)	0 (Amp.)	
PLC	Enable	

DSP

- *Jitter Buffer Control* – jitter buffer control settings;
  - *Min delay (ms)* – set minimum delay (ms);
  - *Max delay (ms)* – set maximum delay (ms);
  - *Optimization factor* – optimization factor.
- *LEC Tail Lenght (ms)* – set the echo cancellation delay before disconnecting (2-32 ms);
- *LEC (Line Echo Cancellation)* – enable echo cancellation;
- *NLP (Non-Linear Processing)* – enable non-linear echo cancellation;
- *VAD (Voice Activite Detector)* – enable voice activity detector;
- *VAD Amp. Threshold (0<Amp<200)* – setting the threshold by triggering VAD within 0<A<200;
- *SID Noise Level* – set SID noise level;
  - *Disable configuration* – set default value;
  - *Fixed noise level (0>Value>127dBov)* – setting a fixed noise level from 0 to 127dBV.
  - *Adjust noise level (-127~127dBov, 0:Not change)* – noise level setting (-127 ~ 127dBV, 0: unchanged)
- *CNG (Comfort Noise Generation)* – enable comfort noise generator;
- *CNG Amp. (0<Amp<200.0 means no limit for Max.Amp.)* – setting the gain value of comfortable noise;
- *PLC (Packet loss concealment)* – enable masking of lost packets.

RTCP	☑ Enable	Interval: 10 (Sec)
RTCP XR	☑ Enable	
Fax/Modem RFC2833 Support	☐ Enable Fax/Modem RFC2833 Relay(For TX)	
	☐ Enable Fax/Modem Inband Removal(For TX)	
	☐ Enable Fax/Modem Tone Play(For RX)	
Speaker AGC	☐ Enable	
	require level:	1
	Max gain up: dB	6
	Max gain down: dB	-6
MIC AGC	☐ Enable	
	require level:	1
	Max gain up: dB	6
	Max gain down: dB	-6
Caller ID Mode	DTMF	
FSK Date & Time Sync	☐ Enable	
Reverse Polarity before Caller ID	☐ Enable	
Short Ring before Caller ID	☐ Enable	

- *RTCP* – inclusion and selection of the RTCP protocol usage interval, s;
- *RTCP XR* – enable advanced RTCP reports;
- *Fax/Modem RFC2833 Support* – enable support for Fax/Modem RFC2833;
- *Speaker AGC, (dB)* – automatic adjustment of volume level, dB;
- *MIG AGC, (dB)* – automatic adjustment of microphone sensitivity level, dB;
- *Caller ID Mode* – select CallerID mode;
- *FSK Date&Time Sync* – enable time synchronization via FM;
- *Reverse Polarity before Caller ID* – enable inverting CallerID polarity;
- *Short Ring before Caller ID* – enable short call CallerID field.

Dual Tone before Caller ID	☐ Enable	
Caller ID Prior First Ring	☑ Enable	
Caller ID DTMF Start Digit	DTMF_A	
Caller ID DTMF End Digit	DTMF_C	
Flash Time Setting (ms) [Space:10, Min:80, Max:2000]	80 < Flash Time < 500	
Speaker Voice Gain (dB) [-32~31],Mute:-32	0	
Mic Voice Gain (dB) [-32~31],Mute:-32	0	

Apply

- *Dual Tone before Caller ID* – enable double call before CallerID field;
- *Caller ID Prior First Ring* – inclusion of a double beep in front of the CallerID field;
- *Caller ID DTMF Start Digit* – setting the starting DTMF symbol of the CallerID;
- *Caller ID DTMF End Degit* – setting the ending DTMF symbol of the CallerID;
- *Flash Time Setting, (ms)* – setting Flash sending duration, ms;

- *Speaker Voice Gain (dB)* – setting the speaker volume, dB;
- *Mic Voice Gain (dB)* – setting the microphone sensitivity, dB.

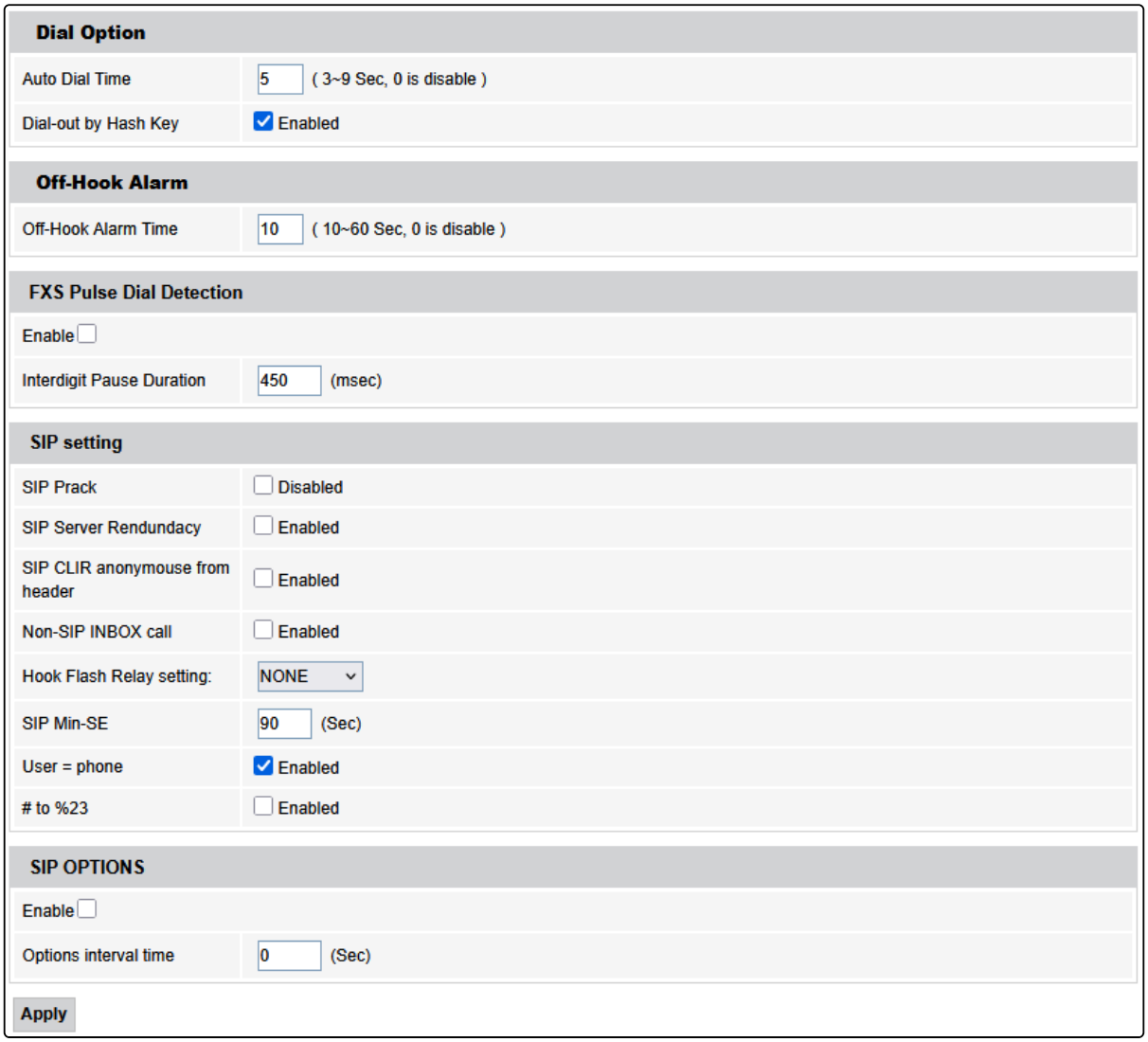
5.7.1.3 The "Tone" submenu. Country selection

VoIP → VoIP → Tone

- *Select Country* – regional settings.

5.7.1.4 The "Other" submenu. Other VoIP settings

VoIP → VoIP → Other



Dial Option

- *Auto Dial Time* – the delay before the call ranges from 3-9 seconds, a value of 0 excludes the delay.
- *Dial-out by Hash Key* – calling a number using the hash key of the numbering plan. When the flag is set, the function is disabled.

Off-Hook Alarm Time

- Off-Hook Alarm Time – setting the response time for the off-hook alarm from 10-60 seconds, a value of 0 disables the alarm.

FXS Pulse Dial Detection

- *Enable* – enable/disable dial tone mode;
- *Interdigit Pause Duration (msec)* – setting the duration of the intersymbol pause, ms.

SIP Setting

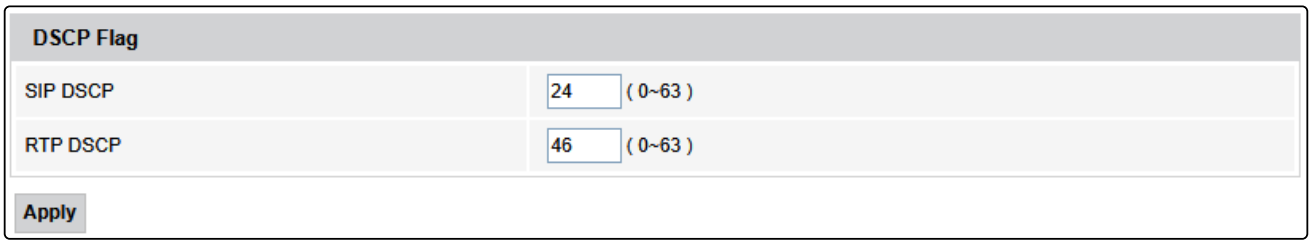
- *SIP Prack* – SIP provisional response. When the flag is set, the service is disabled;
- *SIP Server Rendundacy* – enable backup SIP server;
- *SIP CLIR anonymouse from header* – enable the anti-automatic caller ID (anti-Caller ID) service;
- *Non-SIP INBOX call* – outgoing call via analogue phone;
- *Hook Flash Relay setting* – setting up a short-term call reset;
- *SIP Min-SE* – session check interval;
- *User = phone* – enable the function of assigning a phone number to a user name;
- *# to %23* – enable the function of converting the # symbol.

SIP OPTIONS

- *Enable* – enable/disable the use of the SIP message option;
- *Options interval time* – setting the interval for sending SIP messages.

5.7.1.5 The "Network" submenu

VoIP → VoIP → Network



- *SIP DSCP* – set DHSP priority for SIP;
- *RTP DSCP* – set DHSP priority for RTP.

5.7.1.6 *The "Call history" submenu*

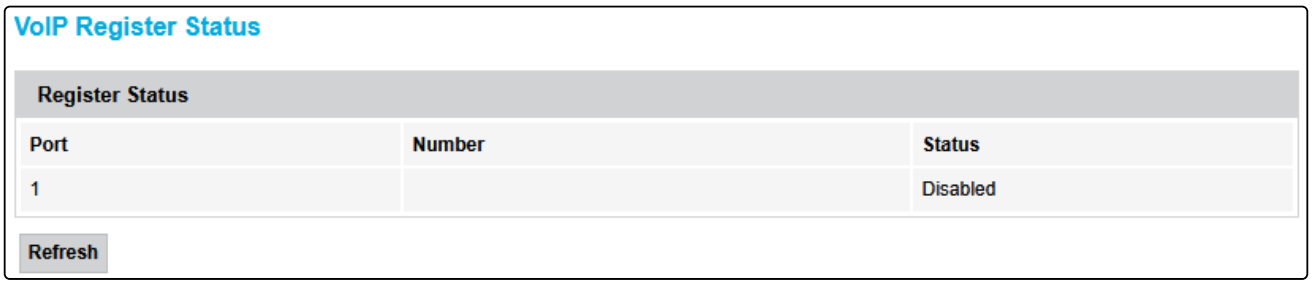
VoIP → VoIP → Call history

- *No.* – sequence number of the entry;
- *Status* – call status;
- *From* – caller number;
- *To* – callee number;
- *Type* – call type;
- *Duration* – call duration;
- *Date Time* – call date.

To update the information, click the "Refresh" button.

5.7.1.7 *The "Register Status" submenu*

VoIP → VoIP → Register Status



- *Port* – port number;
- *Number* – user phone number;
- *Status* – registration status.

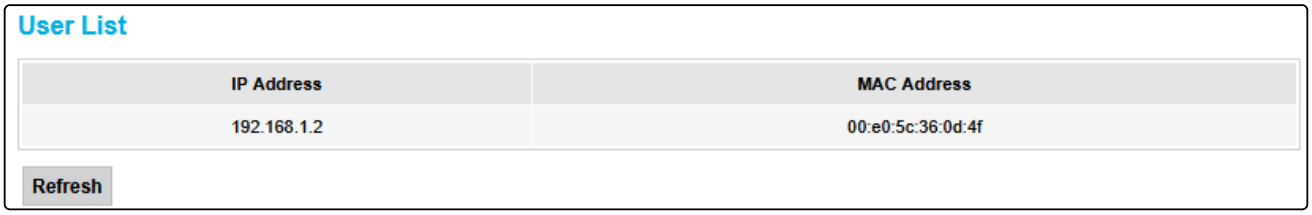
5.8 The "Advance" menu

5.8.1 The "Advance" submenu

5.8.1.1 The "ARP Table" menu

This section shows a list of learned MAC addresses. The ARP efficiency depends a lot on ARP cache presented in every host. The cache contains Internet addresses and corresponding hardware addresses. Every record created in the cache is stored for 5 minutes.

Advance → Advance → ARP table



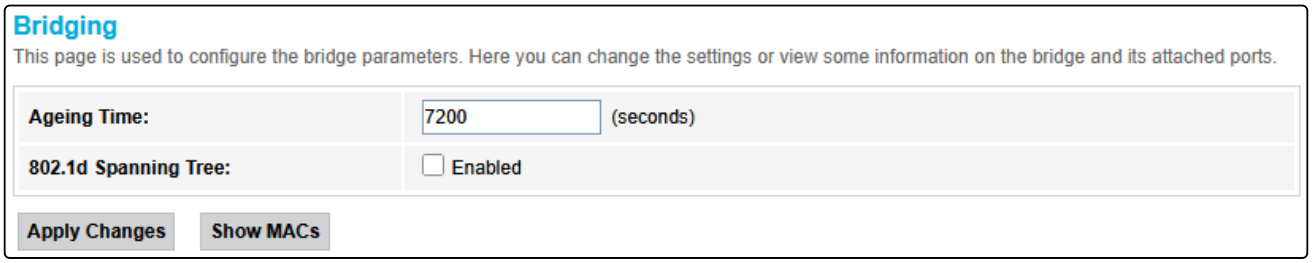
- *IP Address* – IP address of the client;
- *MAC Address* – MAC address of the client.

To update the information, click the "Refresh" button.

5.8.1.2 The "Bridging" submenu. Bridging parameters configuration

In this section you can configure bridge parameters. Here you can configure aging time of addresses in MAC table as well as to enable/disable 802.1d Spanning Tree.

Advance → Advance → Bridging

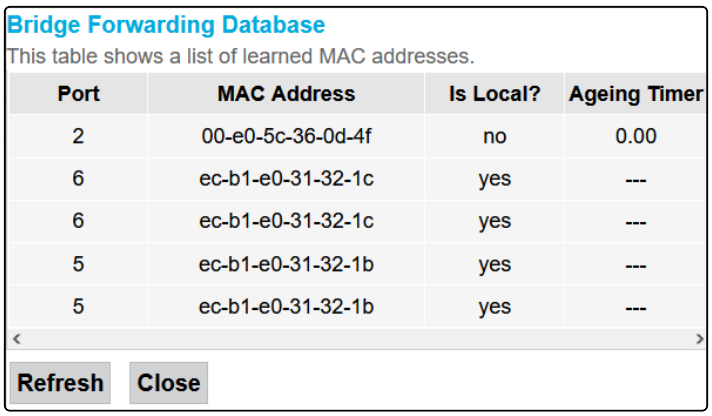


- *Ageing Time* – address lifetime (s);
- *802.1d Spanning Tree* – enable/disable 802.1d Spanning Tree protocol.

To save the changes, click the "Apply Changes" button.

To view the information about bridge and its connected ports click the "Show MACs" button.

Advance → Advance → Bridging → Show MACs



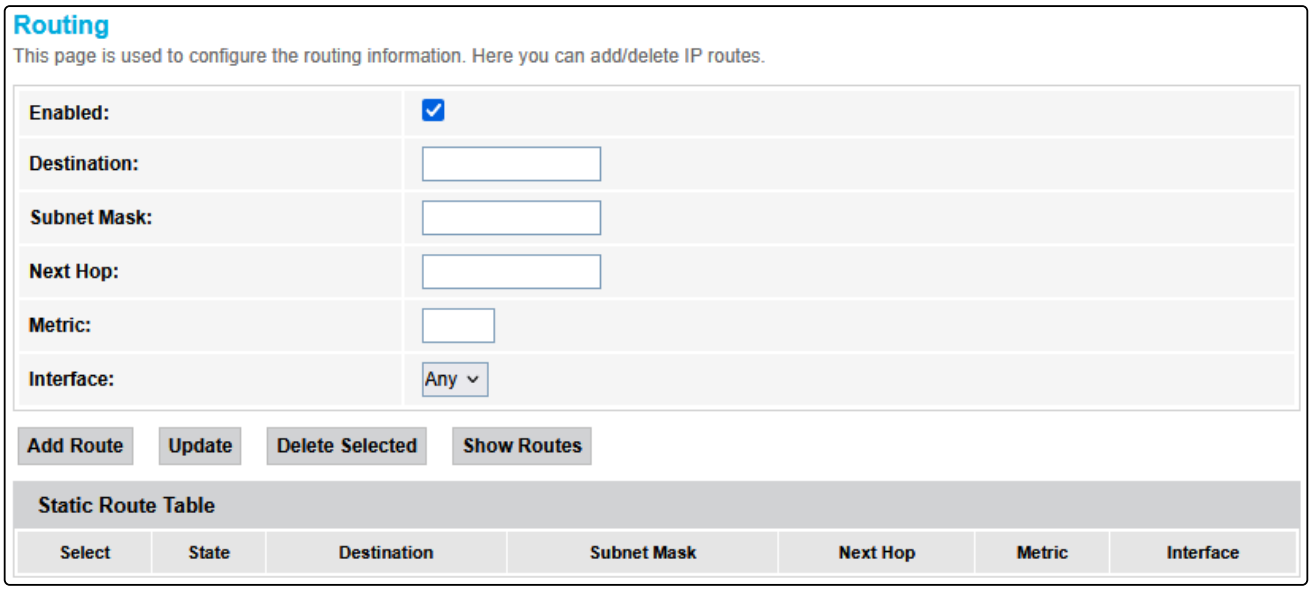
- *Port* – port number;
- *MAC Address* – MAC address;
- *Is Local* – local address;
- *Ageing Timer* – address lifetime.

To update the information in the table, click the "Refresh" button, to close the table, click "Close".

5.8.1.3 The "Routing" submenu. Routing configuration

This submenu is used to configure static routing.

Advance → Advance → Routing



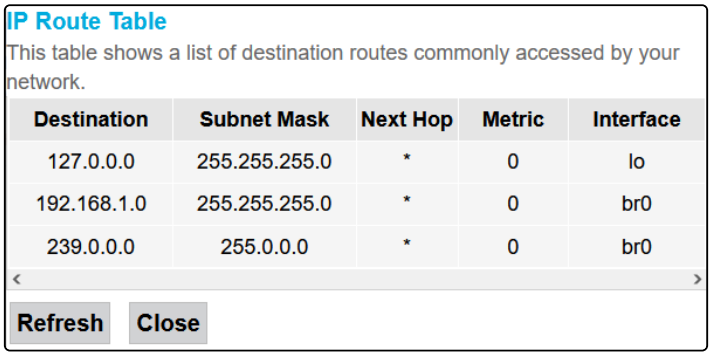
To add the static route check *"Enable"*, fill the corresponding fields and click "Add Route".

- *Enabled* – flag for route adding:
  - *Destination* – destination address;
  - *Subnet Mask* – subnet mask;
  - *Next Hop* – next host;
  - *Metric* – metric;
  - *Interface* – interface.

Added static routes are displayed in the *"Static Route Table"*. To update the information in the table, click the "Update" button, to delete the position from the table select it and click "Delete Selected".

To view the routes that the device often accesses, click the "Show Routes" button, then the *"IP Route Table"* will be displayed.

Advance → Advance → Routing → Show Routes



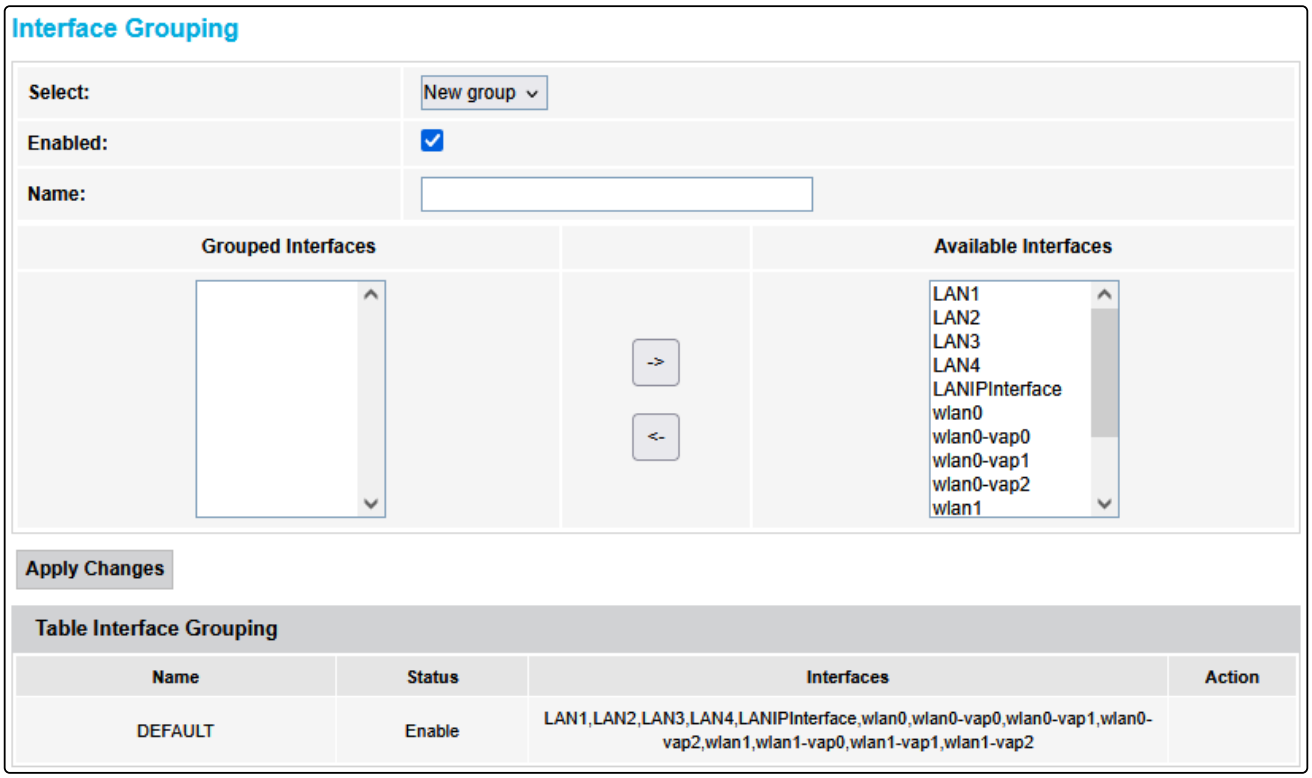
To update the information in the table, click the "Refresh" button, to close the table, click "Close".

5.8.1.4 The "Interface Grouping" submenu

In this section you can group the interfaces. By default all interfaces are in the same group. To place an interface to a new group, you should:

1. Select a new group from the list below;
2. Select interfaces from the "Available Interface" list;
3. Click the arrow "←" to transfer the interfaces into the group;
4. Apply the actions by clicking the "Apply Changes" button.

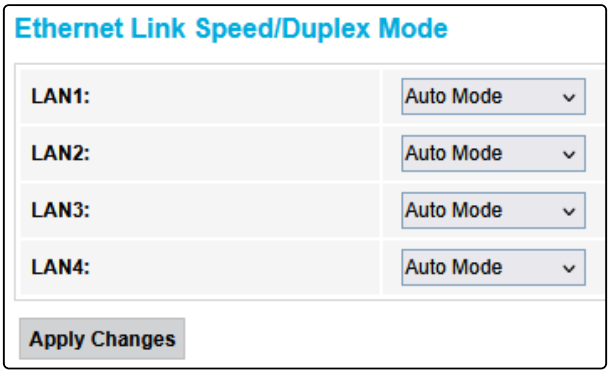
Advance → Advance → Interface Grouping



5.8.1.5 The "Link mode" submenu. LAN ports configuration

In this submenu you can set the LAN ports operation mode. *LAN1/2/3/4* – operation mode configuration; available modes: *10M Half Mode, 10M Full Mode, 100M Half Mode, 100M Full Mode* and *Auto Mode* (auto-negotiation mode).

Advance → Advance → Link mode

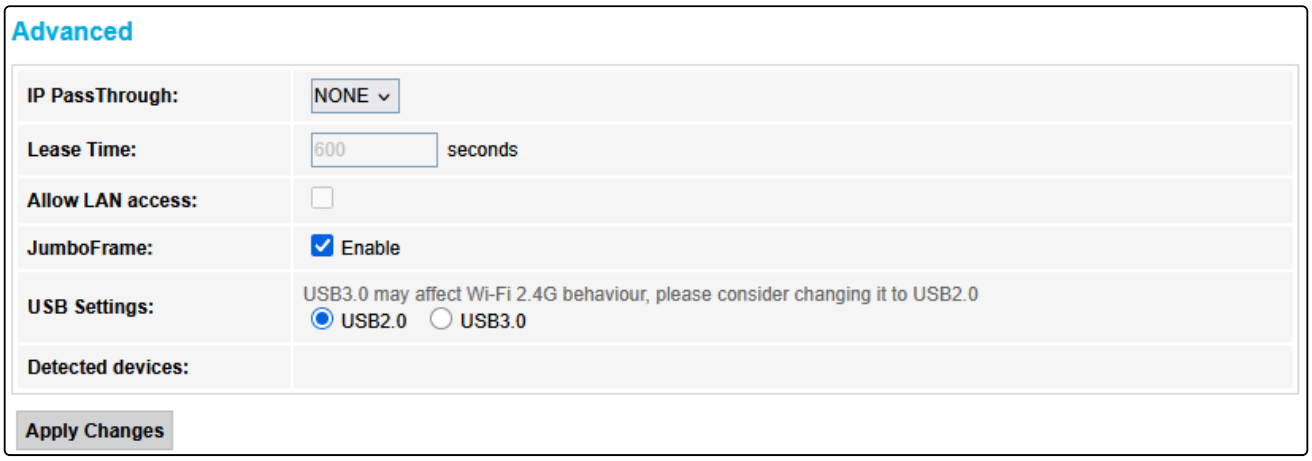


To save the changes, click the "Apply Changes" button.

5.8.1.6 The "Others" submenu. JumboFrame enabling

In this submenu you can enable/disable JumboFrame by selecting or clearing the checkbox "Enable". You can also allow access to the local network and configure the USB port.

Advance → Advance → Others



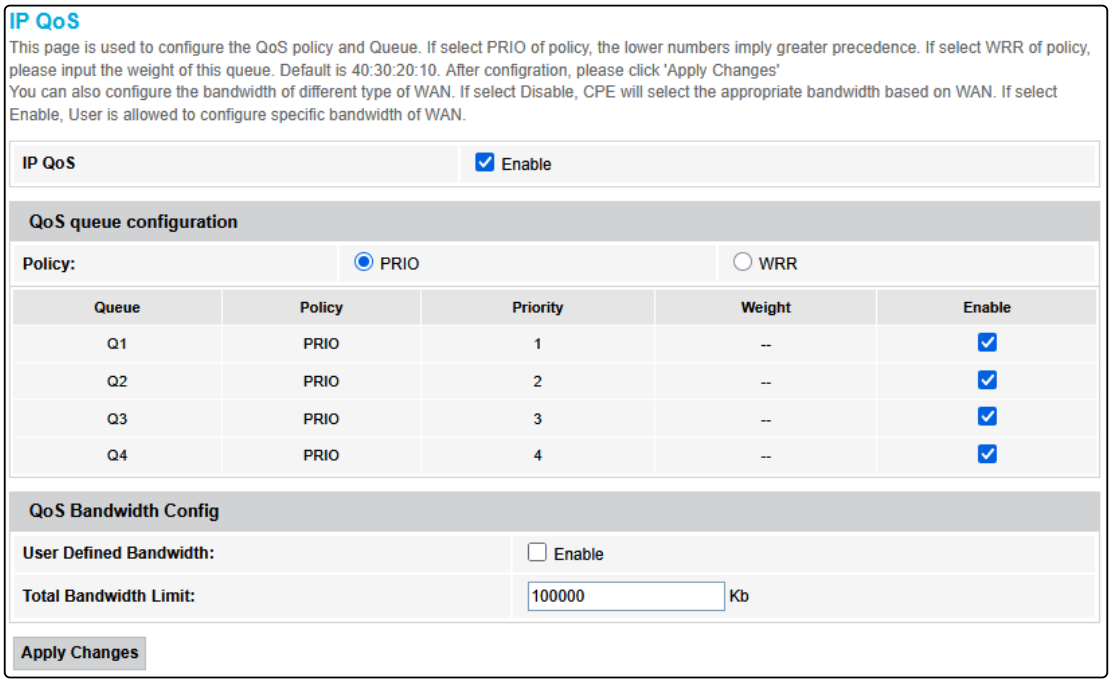
To save the changes, click the "Apply Changes" button.

5.8.2 The "IP QoS" submenu

5.8.2.1 The "QoS Policy" submenu

This submenu enables and configures the Quality of Service (QoS) feature.

Advance → IP QoS → QoS Policy



- *IP QoS* — when the flag is set, the QoS policy and queue settings are enabled.

QoS queue configuration

- *Policy* — definition of a way to label queue scheduling:
  - *PRIO* — strict priority. The smallest queue has the highest priority;
  - *WRR* — a weighted cyclic algorithm. By default, the weight for queues is distributed as 40:30:20:10.

QoS Bandwidth Config

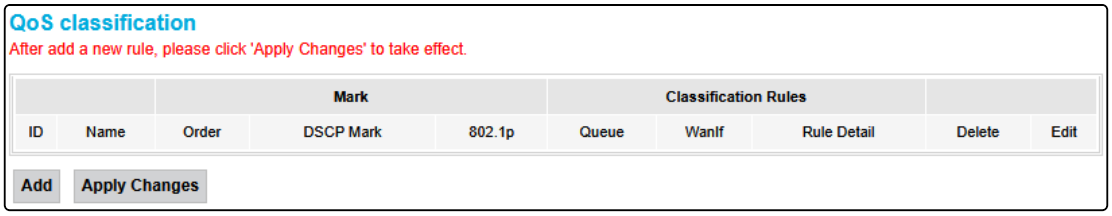
- *User Defined Bandwidth* — when the flag is set, the user's bandwidth limit setting is enabled;
- *Total Bandwidth Limit* — adjusting the bandwidth by the user.

To save the changes, click the "Apply Changes" button.

5.8.2.2 *The "QoS Classification" submenu. Traffic classification rules configuration*

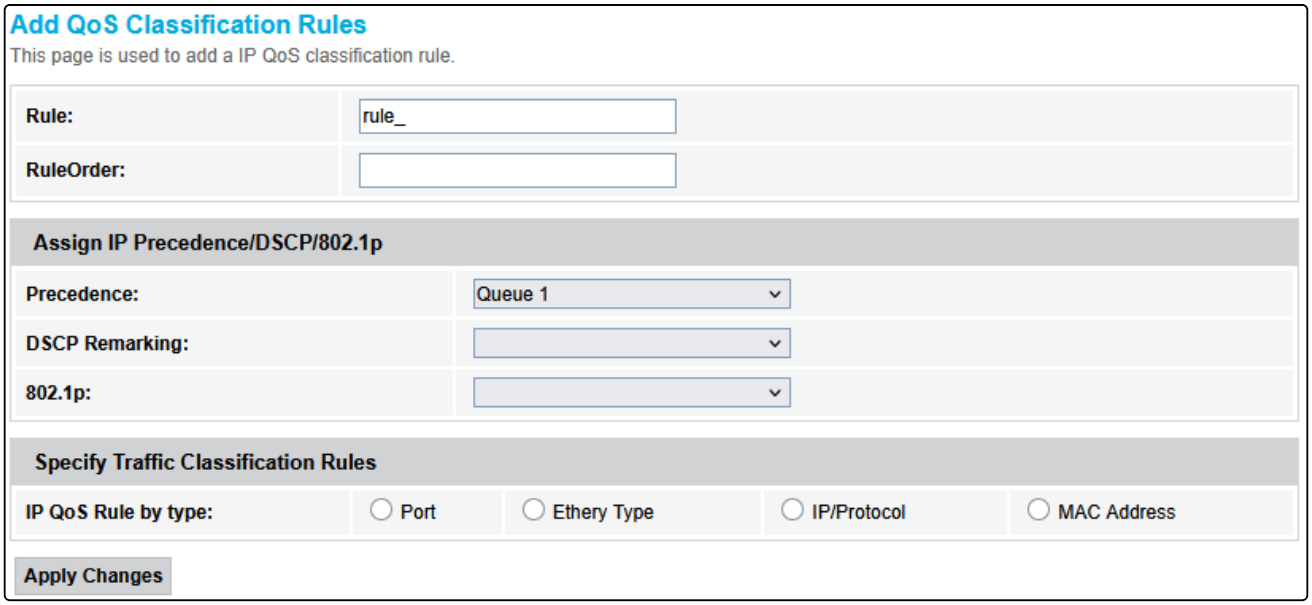
On this page you can specify by which fields and their values the package will be classified, as well as which hardware queue it will end up in.

Advance → IP QoS → QoS Classification



To add a rule, click the "Add" button and fill the appropriate fields.

Advance → IP QoS → QoS Classification → Add



- *RuleName* – rule name;
- *RuleOrder* – sequence number.

Assing IP Precedence/DSCP/802.1p

- *Precedence* – select queue;
- *DSCP* – priority in the IP packet header;
- *802.1p* – priority mark in 802.1Q.

Specify Traffic Classification Rules

- *IP QoS Rule by type* – type classification rule selection:
  - *Port* – by port:
    - *Physical Port* – the physical LAN port selection;
    - *DSCP Pattern* – priority selection.
- *Ethery Type* – by Ethertype:
  - *Ethernet Type* – the type of traffic encapsulated in the Ethernet frame. The input is in hexadecimal format.
- *IP/Protocol* – by IP:
  - *Protocol* – the protocol selection for classification. TCP, UDP, ICMP or TCP/UDP;
  - *DSCP Pattern* – selecting of the DSCP label for classification;

    - *Source IP* – the IP address of the sender of the packet (node or subnet);
    - *Source Mask* – the mask of the source IP address (in the x.x.x format);
    - *Destination IP* – the IP address of the packet recipient (node or subnet);
    - *Destination Mask* – the mask of the destination IP address (in the x.x.x format);
    - *Source Port* – the port from which packets are sent (available only when TCP or UDP protocol isselected);
    - *Destination Port* – the port to which packets are sent (available only when TCP or UDP protocol isselected).
- *MAC Address* – by MAC address:
    - *Source MAC Address* – the MAC address of the sender;
    - *Destination MAC Address* – the MAC address of the recipient.

To save the changes, click the "Apply Changes" button.

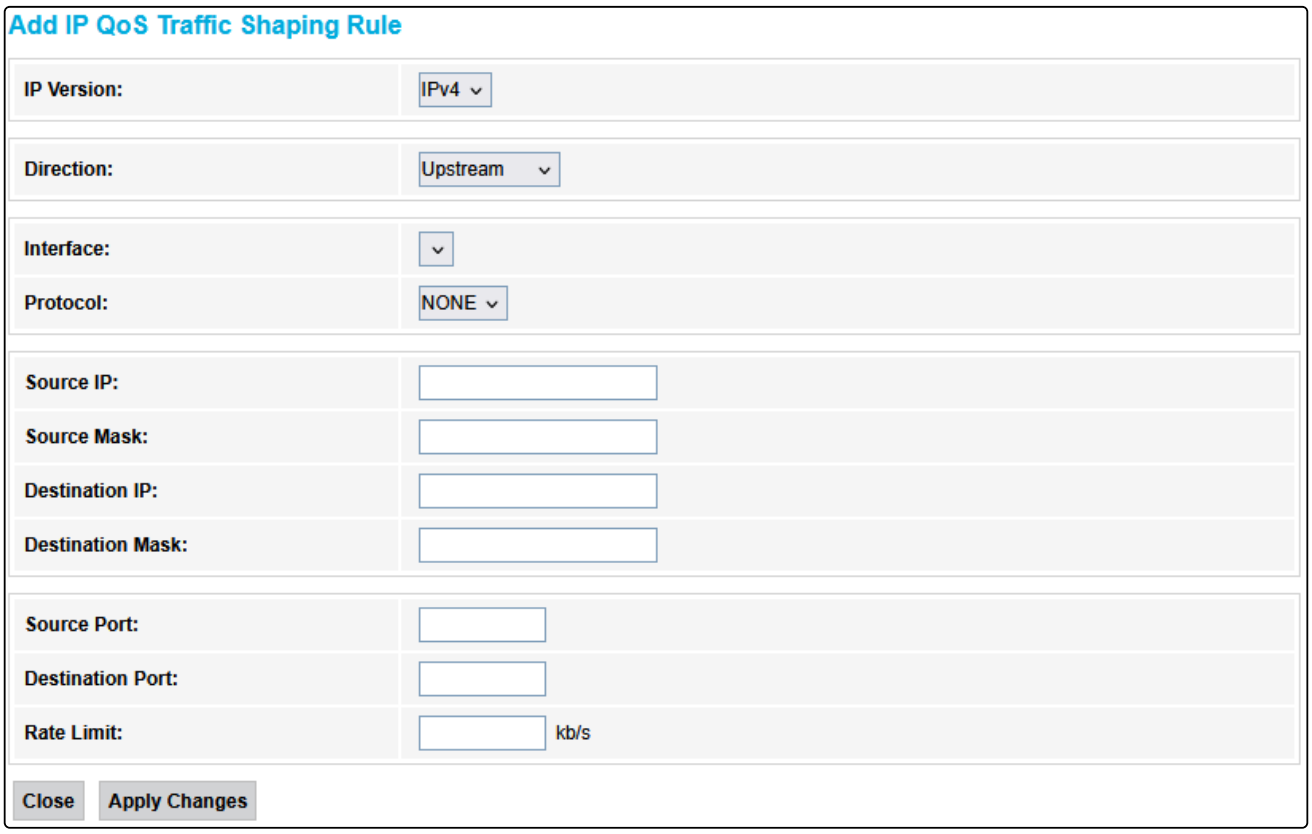
5.8.2.3 The "Traffic Shaping" submenu. Traffic configuration

In this section you can specify traffic restrictions according to certain rules.

Advance → IP QoS → Traffic Shaping

To add, click the "Add" button and fill the corresponding fields.

Advance → IP QoS → Traffic Shaping → Add



- *IP Version* – select IP version;
- *Direction* – flow type selection, downstream or upstream;
- *Interface* – interface selection;
- *Protocol* – protocol;
- *Source IP* – source IP address;
- *Source Mask* – source subnet mask;
- *Destination IP* – destination IP address;
- *Destination Mask* – destination subnet mask;
- *Source Port* – source port;
- *Destination Port* – destination port;
- *Rate Limit (kb/s)* – rate limit, kbit/s.

To save the changes click the "Apply Changes" button, to cancel click "Close".

5.8.3 The "IPv6" submenu. IPv6 configuration

5.8.3.1 The "IPv6 Enable/Disable" submenu

In this section you can enable/disable IPv6 operationby selecting or clearing the checkbox "Enable".

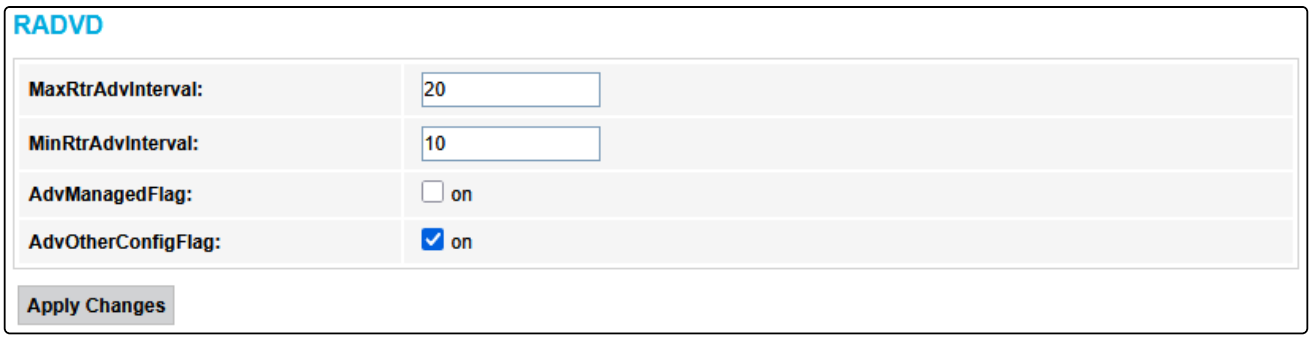
Advance → IPv6 → IPv6 Enable/Disable

To save the changes, click the "Apply Changes" button.

5.8.3.2 The "RADVD" submenu. RADVD configuration

In this submenu you can configure RADVD (Router Advertisement Daemon).

Advance → IPv6 → RADVD



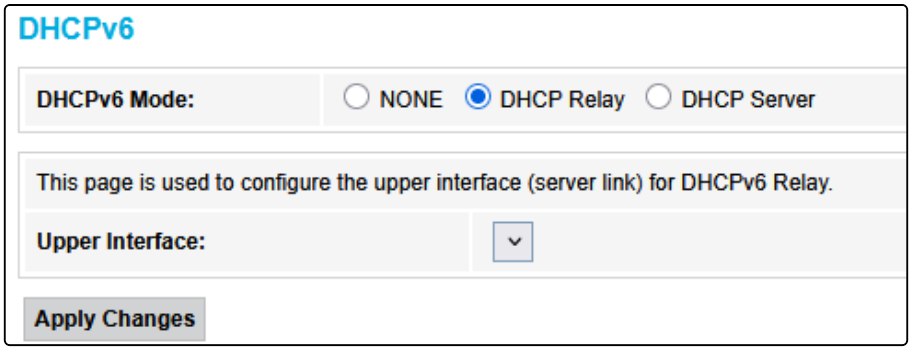
- *MaxRtrAdvInterval* – maximum RA (Router Advertisement) sending interval;
- *MinRtrAdvInterval* – minimum RA sending interval;
- *AdvManagedFlag* – enable/disable "Managed" flag sending in RA;
- *AdvOtherConfigFlag* – enable/disable Other RA flag sending.

To save the changes, click the "Apply Changes" button.

5.8.3.3 The "DHCPv6" submenu. DHCPv6 server configuration

This submenu is used to configure DHCPv6 server. By default, it operates in auto configuration mode (DHCPServer) via prefix delegation.

Advance → IPv6 → DHCPv6



- *DHCPv6 Mode* – enable/disable DHCPv6 server operation;
- *Upper Interface* – select interface.

To save the changes, click the "Apply Changes" button.

5.8.3.4 *The "MLD proxy" submenu. MLD proxy function configuration*

In this section you can enable/disable MLD-proxy operation. For this you should check *"Enable/Disable"*.

Advance → IPv6 → MLD proxy

- *Robust Count* – the number of attempts to send an MLD message in case of packet loss;
- *Query Interval* – the time interval indicating the frequency of sending Query messages;
- *Query Response Interval* – the time interval indicating the delay in responding to the Query message from the client;
- *Response interval last group* – the number of Group-Specific messages sent after the last client leaves the group.

To save the changes, click the "Apply Changes" button.

5.8.3.5 *The "MLD snooping" submenu. MLD snooping function configuration*

In this section you can enable/disable MLD-snooping operation. For this you should select *"Enable"*.

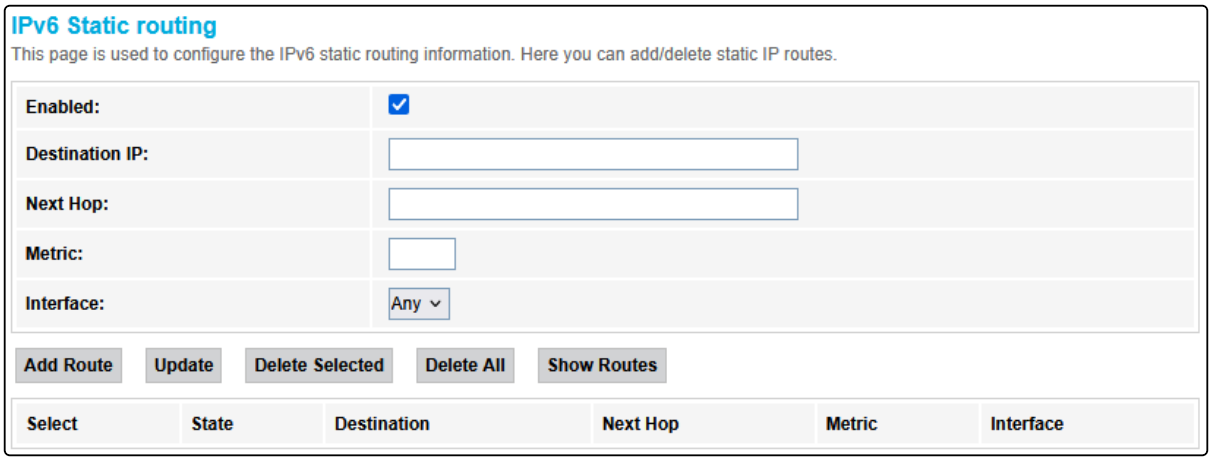
Advance → IPv6 → MLD snooping

To save the changes, click the "Apply Changes" button.

5.8.3.6 The "IPv6 routing" submenu. IPv6 routes configuration

This section configures static IPv6 routes.

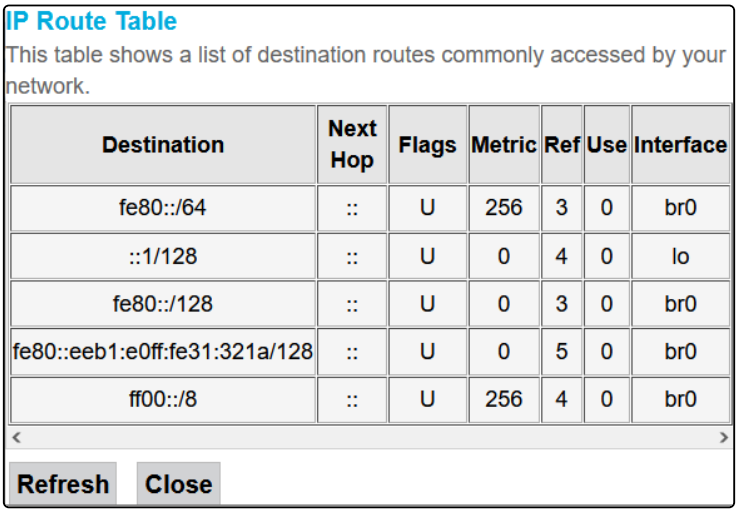
Advance → IPv6 → IPv6 routing



- *Enable* – flag for route adding;
- *Destination IP* – destination address;
- *Next Hop* – next host;
- *Metric* – metric;
- *Interface* – interface.

To add IPv6 Routing, fill in the appropriate fields and click the "Add Route" button. Added routes are displayed in the table, to update the information click the "Update" button. To delete the whole table, click the "Delete All" button; To delete one route, select it and click the "Delete Selected" button. The "Show Routes" button displays a table of static IPv6 routes that the network typically accesses.

Advance → IPv6 → IPv6 routing → Show Routes



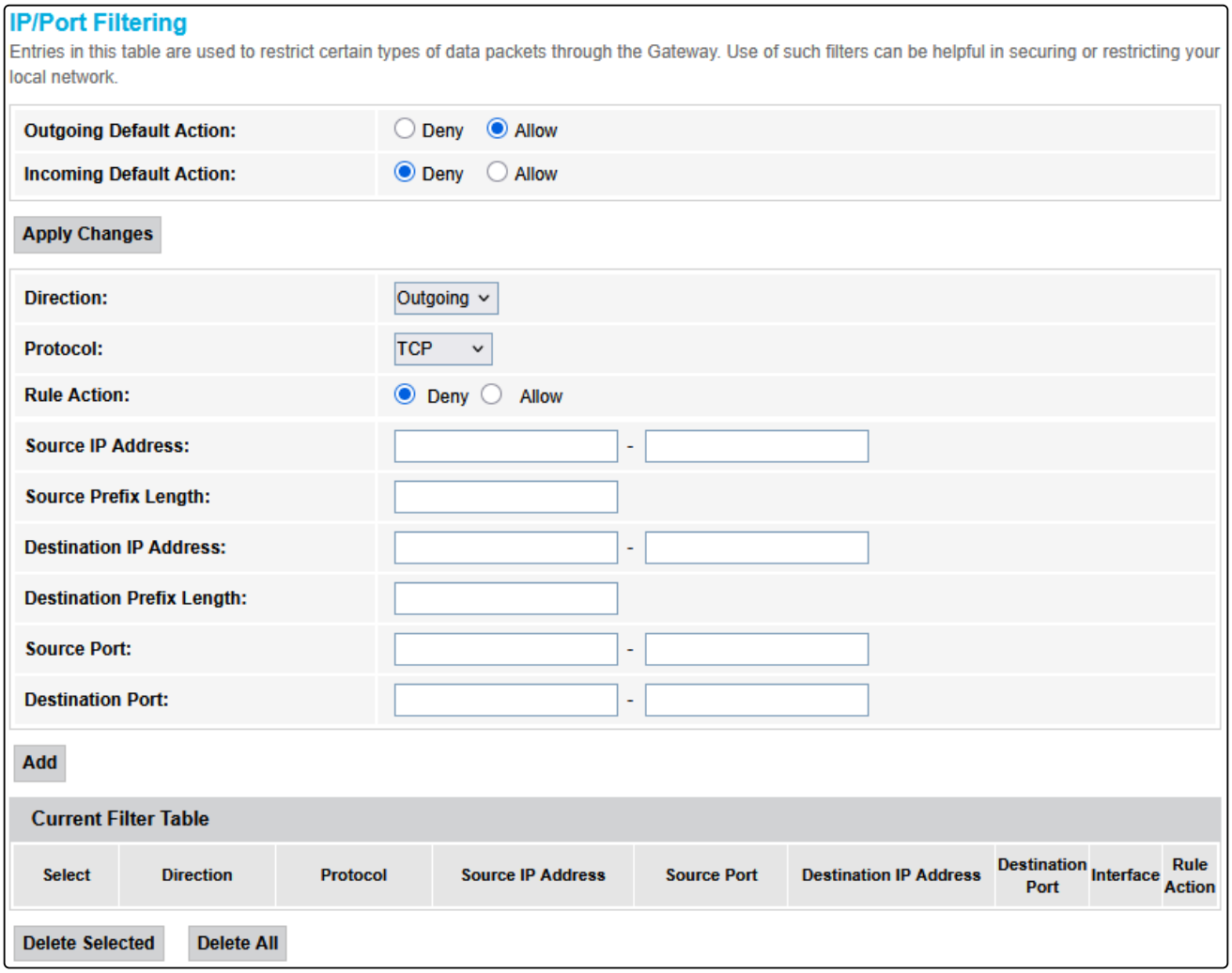
- *Destination* – destination network;
- *Next Hop* – next host;
- *Flags* – flags;
- *Metric* – metric;
- *Ref* – route source;
- *Use* – route usage;
- *Interface* – interface through which the specified route is available.

To update the table click "Refresh"; to close it click "Close".

5.8.3.7 The "IP/Port filtering" submenu. Packet filtering configuration

Use this page to configure the filtering of data packets transmitted through the gateway.

Advance → IPv6 → IP/Port filtering



- *Outgoing/Incoming Default Action* – default action:
  - *Deny* – when checked, traffic pass is prohibited by default;
  - *Allow* – when checked, traffic pass is allowed by default;

To save the changes, click the "Apply Changes" button.

- *Direction (Outgoing/Incoming)* – select traffic direction;
- *Protocol* – select protocol;
- *Rule Action (Deny/Allow)* – traffic processing policy;
- *Source IP Address* – source IP:
  - *Source Prefix Lenght;*
  - *Source Port* – source port;
- *Destination IP Address* – destination IP:
  - *Source Port* – source port;
  - *Destination Port* – destination port.

To add a filter fill the corresponding fields and click the *"Add"* button. Added filters are displayed in the *"Current Filter Table"*. To delete the whole table, click the "Delete All" button; To delete one filter, select it and click the "Delete Selected" button.

5.9 The "Diagnostics" menu

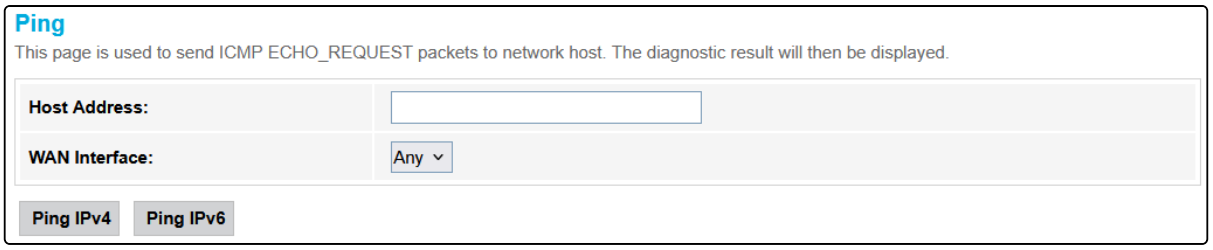
Diagnostics section of access to various network nodes.

5.9.1 The "Diagnostics" submenu

5.9.1.1 The "Ping" submenu. Checking the Availability of Network Devices

Use this menu to test the availability of network devices with Ping utility.

Diagnostics → Diagnostics → Ping

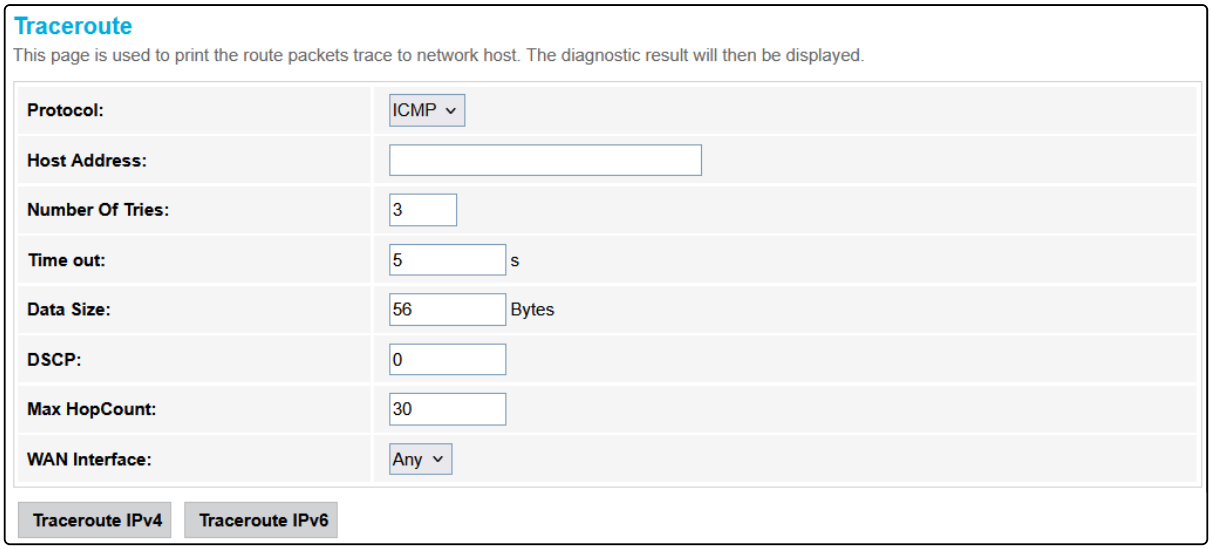


To test the availability of the connected device, enter its IP address into the *"Host Address"* field and click the "Ping IPv4" or "Ping IPv6" button.

5.9.1.2 The "Traceroute" submenu

This submenu is intended for network diagnostics by sending UDP packets and receiving a message about port availability/inaccessibility.

Diagnostics → Diagnostics → Traceroute

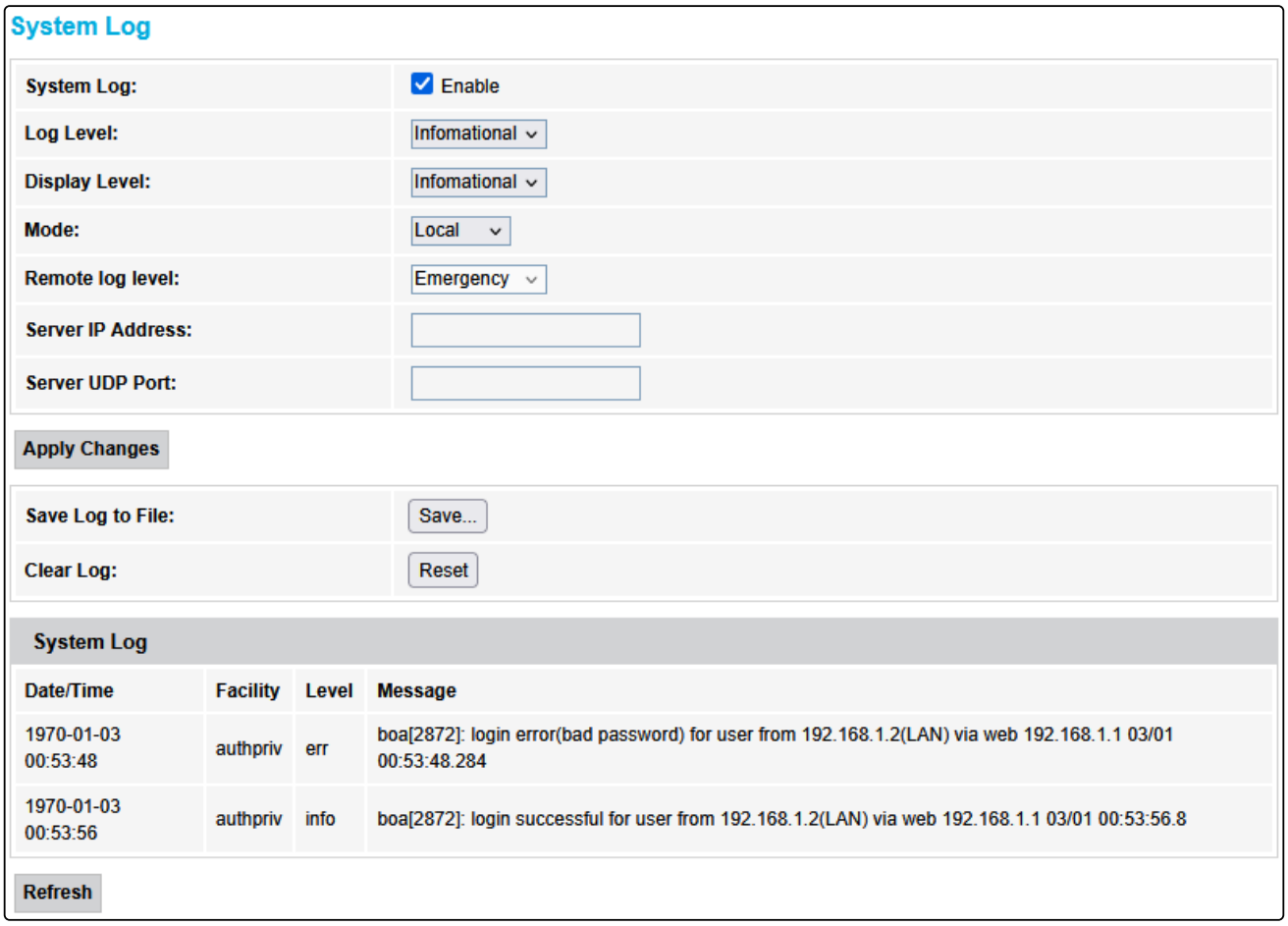


- *Protocol* — the protocol used for tracing;
- *Host Address* — the address of the device to which tracing will be performed;
- *Number of Tries* — the number of tracing attempts;
- *Time out* — packet response timeout;
- *Data Size* — the size of the packet data in bytes;
- *DSCP* — the value of Differentiated services codepoint in the packets being sent;
- *Max HopCount* — the maximum number of nodes for routing a packet;
- *WAN Interface* — the interface through which tracing will be performed.

To display the path of the information packet from its source to its destination, you should enter its IP address in the *"Host Address"* field, specify the the other parameters and click the "Traceroute IPv4" or "Traceroute IPv6" button.

5.9.1.3 The "System Log" submenu

Diagnostics → Diagnostics → System Log



- *System Log* – when the flag is set, the logging feature is active;
- *Log Level* – selection of the maximum logging level;
- *Display Level* – the maximum display level of system messages on the web interface;
- *Mode* – selection of the log mode;
- *Remote log level* – selection of the maximum logging level for remote log:
- *Server IP Address* – the IP address of the Syslog server where all events are saved;
- *Server UPD Port* – the port number of the Syslog server.

To save the changes, click the "Apply Changes" button.

- *Save Log to File* – to save the log to a file, click the "Save" button and select the appropriate directory.
- *Clear Log* – to reset the data in the system log, click the "Reset" button.

To update the log, click the "Refresh" button.

5.10 The "Admin" submenu

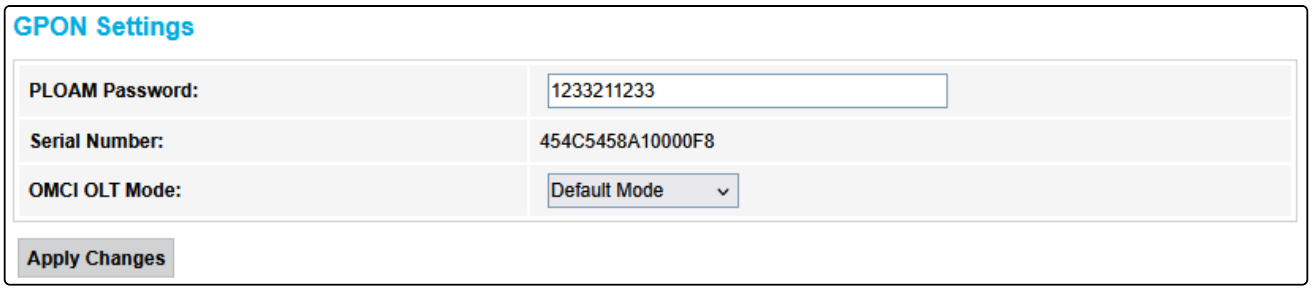
Device management section. In this menu, you can configure passwords, time, configurations, etc.

5.10.1 The "Admin" submenu

5.10.1.1 The "GPON Setting" submenu

In this section you can specify the password for activating the terminal on OLT.

Admin → Admin → GPON Settings



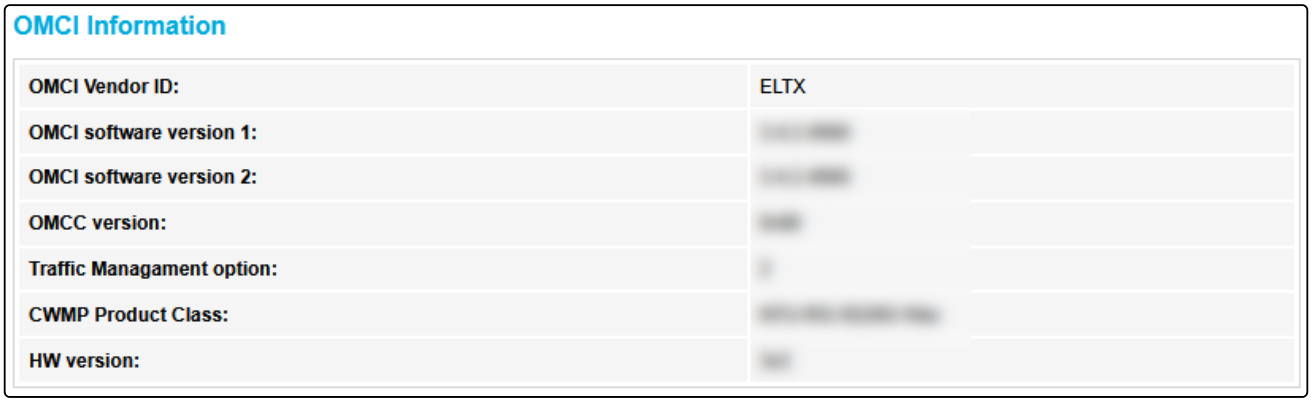
- *PLOAM Password* – password to activate the terminal on OLT;
- *Serial Number* – PON CPE serial number;
- *OMCI OLT Mode* – selecting the OMCI remote control mode.

To save the changes, click the "Apply Changes" button.

It is not recommended to change the activation password without the Internet service provider approval.

5.10.1.2 The "OMCI Information" submenu

Admin → Admin → OMCI Information

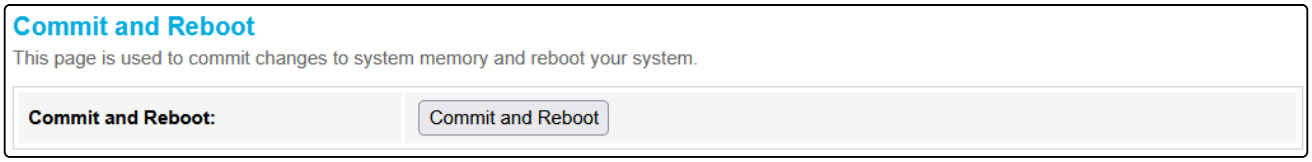


- *OMCI Vendor ID* – manufacturer name;
- *OMCI software version 1* – first area SW version;
- *OMCI software version 2* – second area SW version;
- *OMCC version* – OMCI management channel version;
- *Traffic Management option* – traffic priority;
- *CWMP Product Class* – device model;
- *HW version* – hardware version.

5.10.1.3 The "Commit/Reboot" submenu. Saving changes and rebooting the device

Click the "Commit and Reboot" button to reboot the device or to save changes in system memory. The rebooting process takes a few minutes to complete.

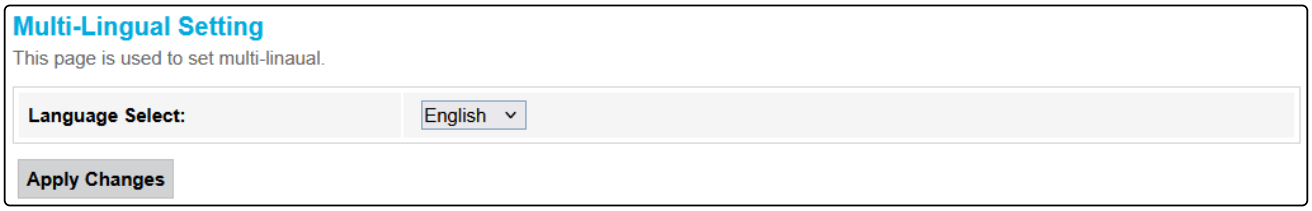
Admin → Admin → Commit/Reboot



5.10.1.4 The "Multi-lingual Settings" submenu. Selecting the interface language

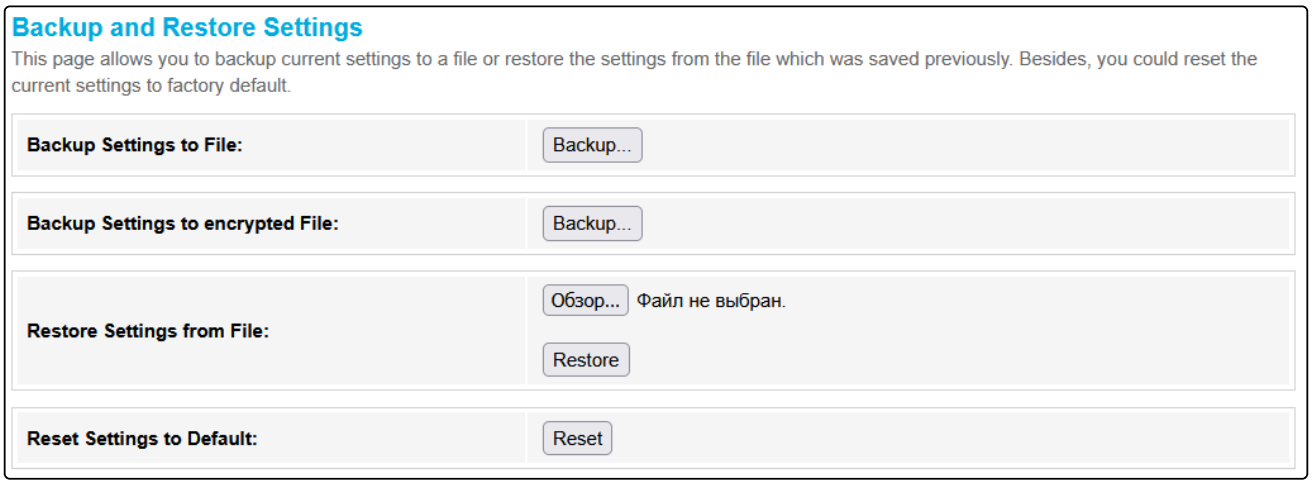
Use the "Language Select" field to set the language of the device's web interface and click the "Apply Changes" button to save the changes.

Admin → Admin → Multi-lingual Settings



5.10.1.5 The "Backup/Restore" submenu

Admin → Admin → Backup/Restore

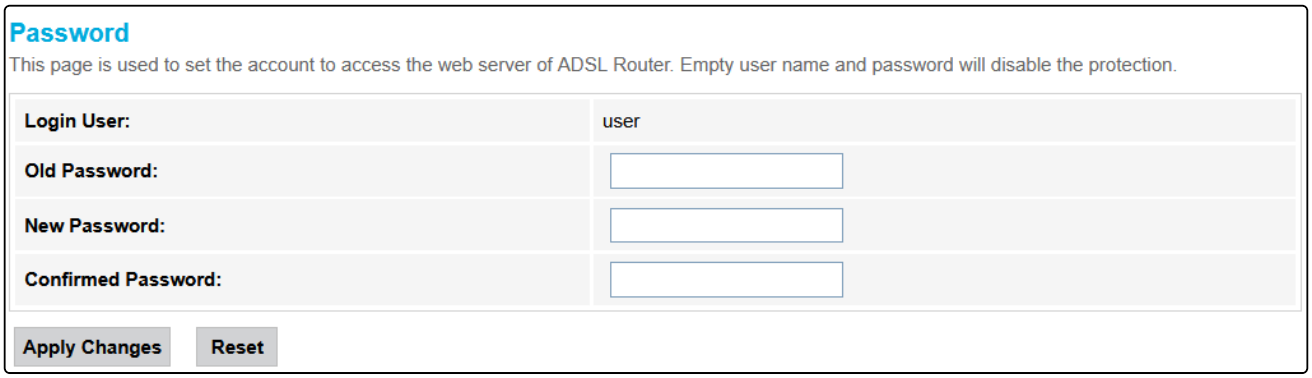


In this section, you can copy the current settings to a file by clicking the "Backup" button ("Backup Settings to File") or copy them via encryption mode ("Backup Settings to encrypted File"). It is also possible to restore the settings from a file that was saved earlier ("Restore Settings from a File") by clicking the "Restore" button and reset the current settings to factory defaults by clicking the "Reset" button.

5.10.1.6 The "Password" submenu. Access control configuration (setting passwords)

In this section you can change a password to access the device.

Admin → Admin → Password



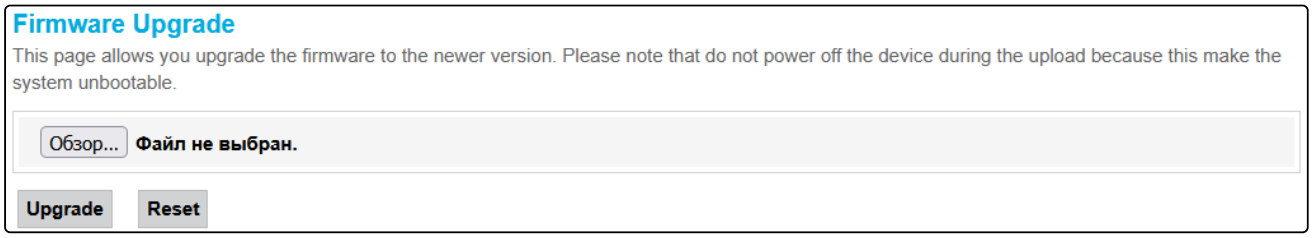
To change the password, enter the existing password in the *"Old Password"* field, then the new password in *"New Password"* and confirm it with *"Confirmed Password"*.

To confirm and save changes, click the "Apply changes" button. Click the "Reset" button to reset the value.

5.10.1.7 The "Firmware Upgrade" submenu

To update firmware, select firmware file by clicking the "Select file" button and click "Upgrade". To reset the value, click the "Reset" button.

Admin → Admin → Firmware Upgrade

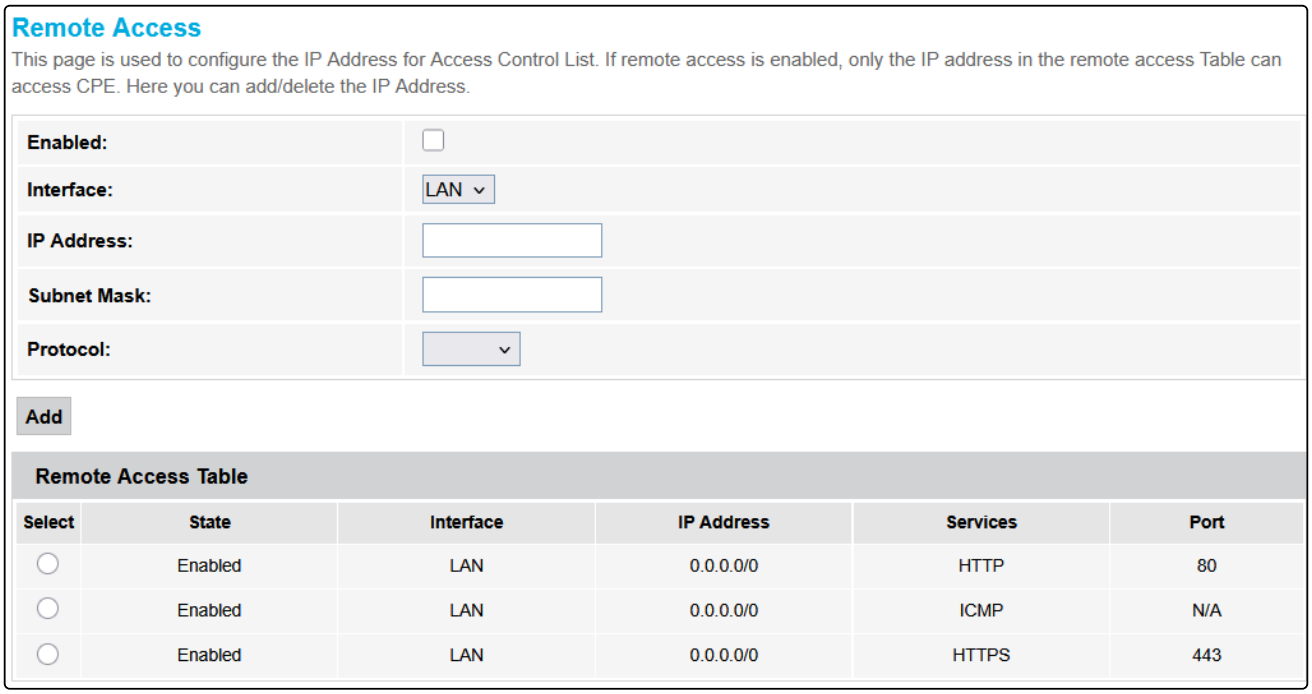


⚠ Do not switch off or reboot the device during the update. The process may take several minutes. The device will be automatically rebooted when the update is completed.

5.10.1.8 The "Remote Access" submenu

In this section you can configure remote access rules via HTTP/ICMP protocols.

Admin → Admin → Remote Access



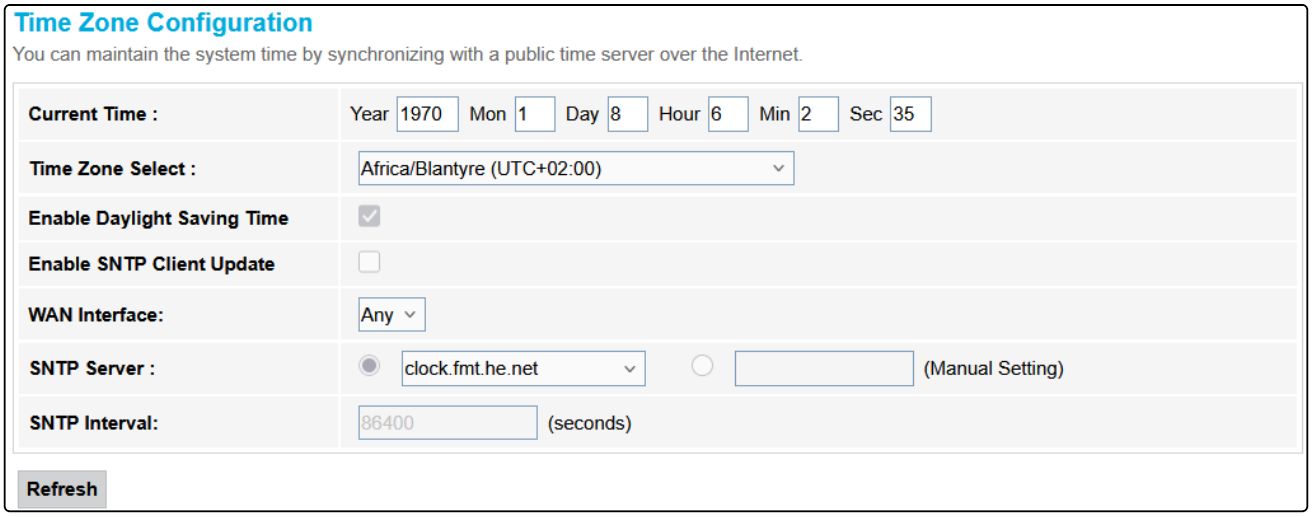
- *Enabled* – enabling the rule to add;
- *Interface* – interface to which the rule applies;
- *IP Address* – source IP adress;
- *Subnet Mask* – subnet mask;
- *Protocol* – destination port.

To add a rule fill the corresponding fields and click the "Add" button. Added rules are displayed in the *"Remote Access Table"*. To activate/deactivate the selected rule, click the *"Toggle selected"* button. To delete one rule, select it with a flag in the *Select* column and click the "Delete Selected" button.

5.10.1.9 The "Time Zone" submenu

In this section you can configure the device system time. Synchronization with accurate online time-servers is available.

Admin → Admin → Time Zone



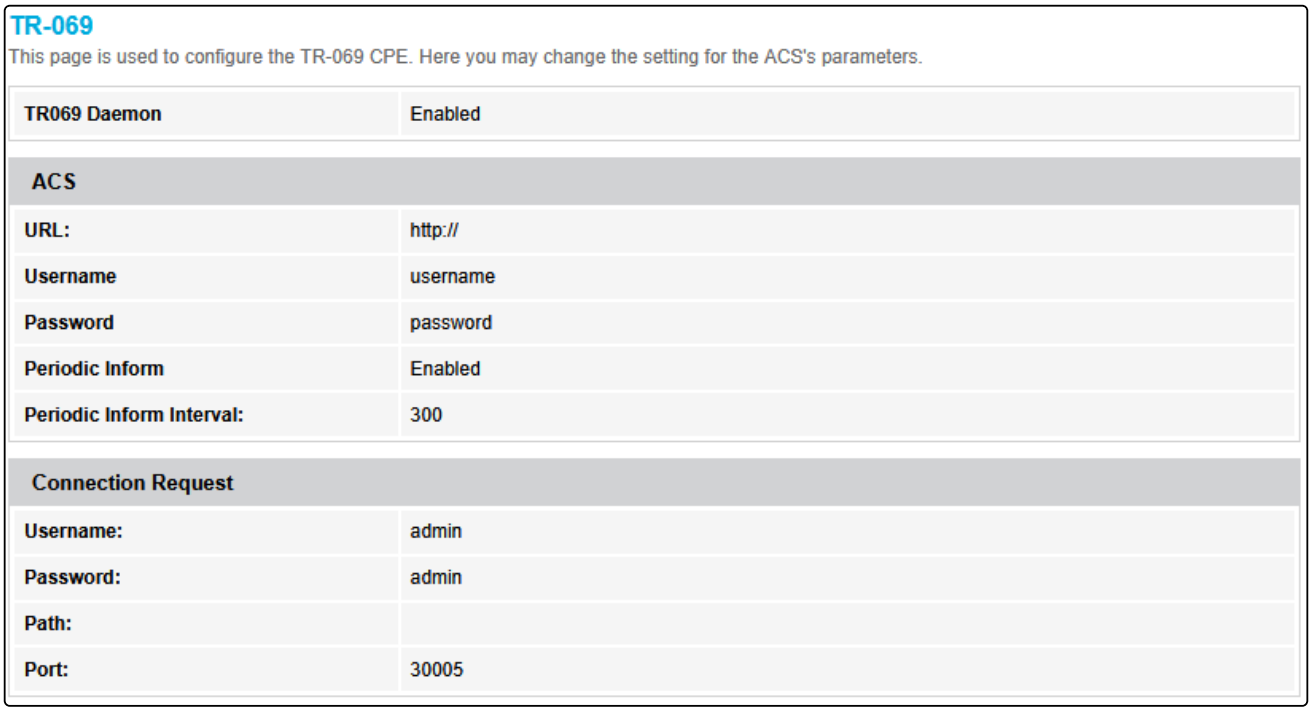
- *Current Time* – current time;
- *Time Zone Select* – timezone;
- *Enable Daylight Saving Time* – enable daylight saving time;
- *Enable SNTP Client Update* – enable time synchronization via SNMP;
- *WAN Interface* – interface for time update;
- *SNTP Server* – preferred time server;
- *SNTP Interval* – NTP server synchronization interval.

To save the changes click the "Apply Changes" button, to update the information click the "Refresh" button.

5.10.1.10 The "TR-069" submenu

The section contains data for the device managment via TR-069.

Admin → Admin → TR-069



- *TR069 Daemon* – enable/disable TR-069 daemon.

ACS

- *URL* – URL for connection;
- *UserName* – user name for access to the server;
- *Password* – user password for access to the server;
- *Periodic Inform* – enable/disable the periodic of sending messages;
- *Periodic Inform Interval* – message sending interval.

Connection Request

- *UserName* – user name;
- *Password* – password for connection;
- *Path* – connection path;
- *Port* – port for connection.

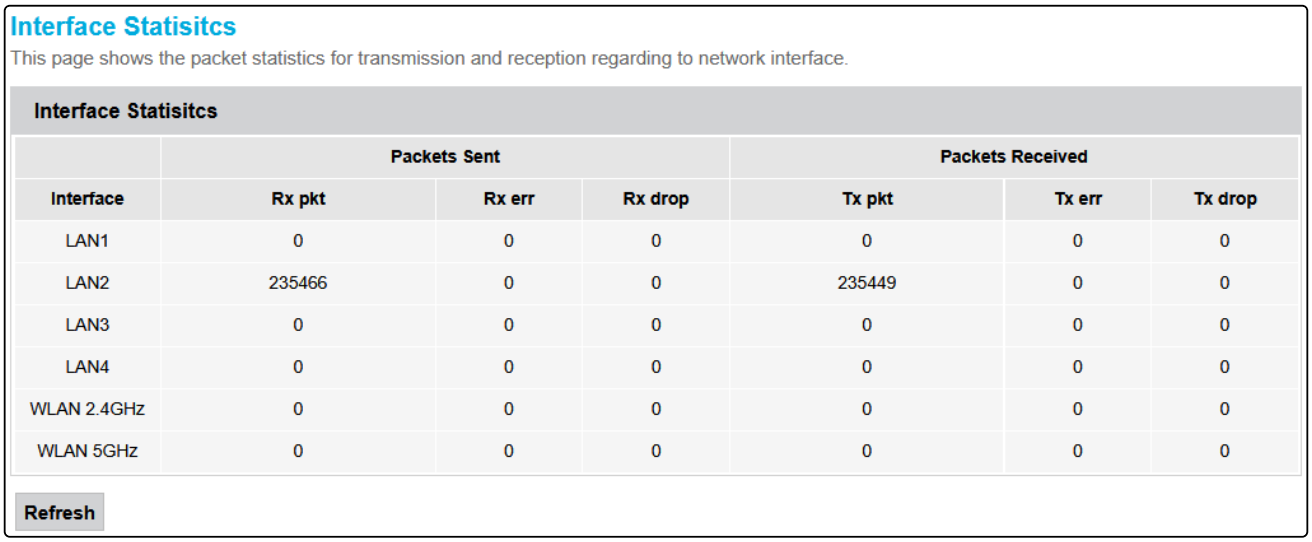
5.11 The "Statistics" menu

5.11.1 The "Statistics" submenu

5.11.1.1 The "Interface" submenu

This section displays timers/errors for packets for each interface.

Statistics → Statistics → Interface



Interface Statisitcs

This page shows the packet statistics for transmission and reception regarding to network interface.

Interface Statisitcs

	Packets Sent			Packets Received		
Interface	**Rx pkt**	**Rx err**	**Rx drop**	**Tx pkt**	**Tx err**	**Tx drop**
LAN1	0	0	0	0	0	0
LAN2	235466	0	0	235449	0	0
LAN3	0	0	0	0	0	0
LAN4	0	0	0	0	0	0
WLAN 2.4GHz	0	0	0	0	0	0
WLAN 5GHz	0	0	0	0	0	0

Refresh

- *Interface* – interface;
- *Rx pkt* – packets received;
- *RX err* – errors on receive;
- *Rx drop* – rejected on receive;
- *Tx pkt* – packets sent;
- *Tx err* – transmission error;
- *Tx drop* – rejected on transmission.

5.11.1.2 The "PON Statistics" submenu

This section displays timers for the optical interface:

Statistics → Statistics → PON Statistics

PON Statistics

Bytes Sent:	0
Bytes Received:	0
Packets Sent:	0
Packets Received:	0
Unicast Packets Sent:	0
Unicast Packets Received:	0
Multicast Packets Sent:	0
Multicast Packets Received:	0
Broadcast Packets Sent:	0
Broadcast Packets Received:	0
FEC Errors:	0
HEC Errors:	0
Packets Dropped:	0
Pause Packets Sent:	0
Pause Packets Received:	0

6 List of changes

Document version	Suitable firmware version	Issue date	Revisions
Version 1.2	3.4.2	03.2025	Third issue
Version 1.1	3.4.1	10.2024	Second issue
Version 1.0	3.4.0	06.2024	First issue

TECHNICAL SUPPORT

For technical assistance in issues related to handling Eltex Ltd. equipment, please, address to Service Center of the company:

http://www.eltex-co.com/support

You are welcome to visit Eltex official website to get the relevant technical documentation and software, to use our knowledge base or consult a Service Center Specialist.

Official site: http://www.eltex-co.com/

Download Center: http://www.eltex-co.com/support/downloads/