

## Contents

Router Login.....	2
Change of DNS (admin account) .....	3
UPnP router configuration (admin account).....	4
LAN clients (admin account) .....	5
Wi-Fi password and SSID change (admin account) .....	6
Creating, disabling and changing settings for SSIDs (admin account) .....	8
Wi-Fi channel change (admin account) .....	10
Wi-Fi security (admin account) .....	12
WPS connection (admin account) .....	13
Change of admin credentials (admin account) .....	14
Reboot and Factory Reset (admin account).....	16
USB storage (admin account).....	18
Port forwarding (admin account).....	20
DMZ (admin account) .....	22
DHCP Binding (Admin account).....	23
Public IPv4 address block in LAN network.....	24

## Router Login

To log into your router, connect your desktop computer or laptop via ethernet cable to the router's LAN port (or use Wi-Fi connection). To access and configure the router, open a web browser such as Google Chrome, Microsoft Edge, Mozilla Firefox, Opera or any similar application. Type **192.168.1.1** in the address bar of the browser. Image 1 illustrates the window that will appear on screen. In the Username field, type "**admin**". In the Password field, type the password as it appears on the back of your router. Once all fields are populated, click **Login** button.

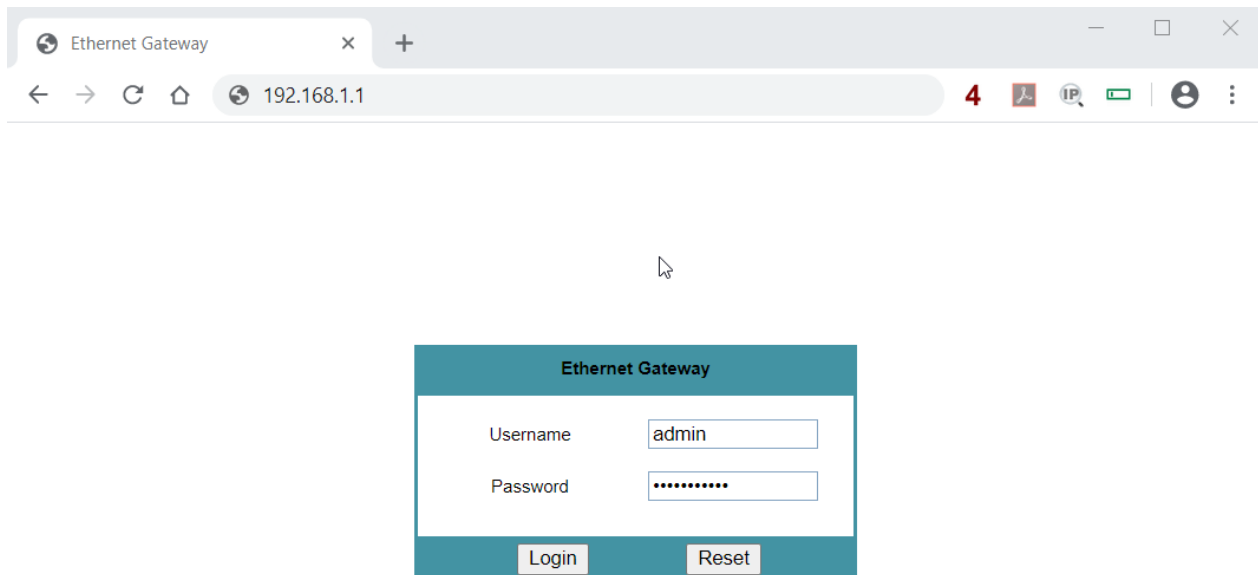
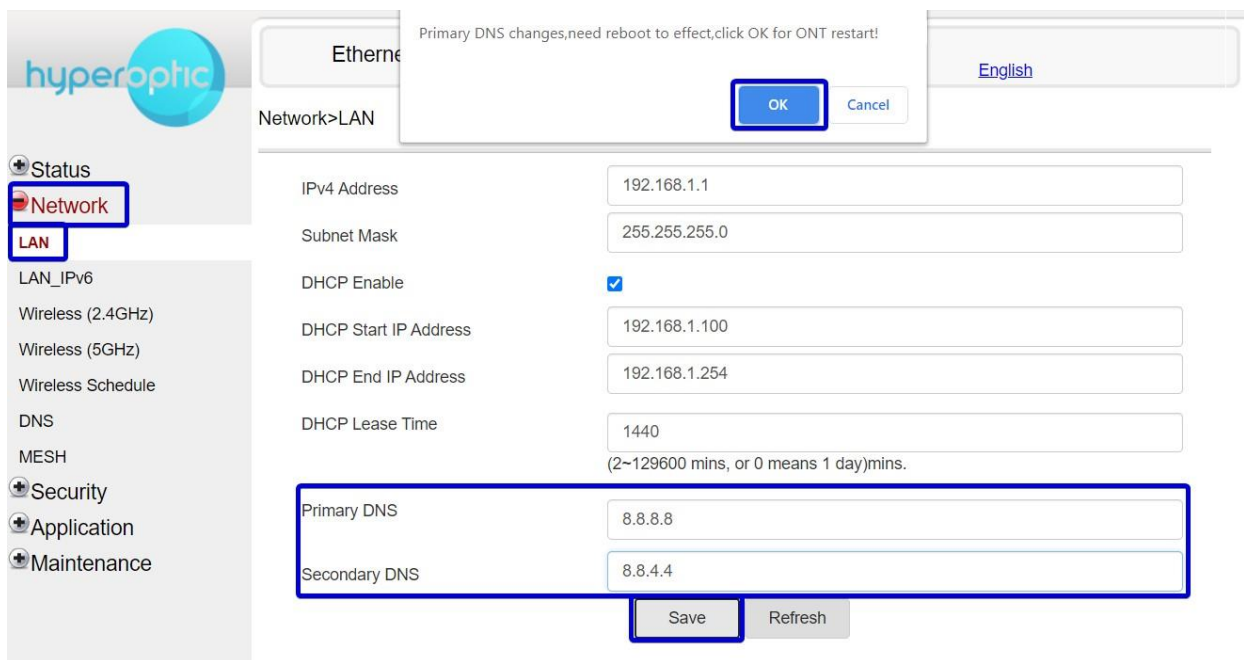


Image 1. Router HA-140W-B Login screen

## Change of DNS (admin account)

To change your DNS properties for local LAN clients, log into your router (page 2) and go to **Network > LAN** (see image 2). By default, the router uses two Hyperoptic DNS servers. These servers communicate directly with the WAN ethernet router port and provide means for swift browsing. To define specific DNS, use fields **Primary DNS** and **Secondary DNS**. In these fields, enter the IPv4 address of your desired server (e.g. 8.8.8.8 or 8.8.4.4) and click **Save**. Click **OK** in the pop-up window to confirm router reboot and settings change.



Primary DNS changes, need reboot to effect, click OK for ONT restart!

English

Network > LAN

IPv4 Address: 192.168.1.1

Subnet Mask: 255.255.255.0

DHCP Enable: ☒

DHCP Start IP Address: 192.168.1.100

DHCP End IP Address: 192.168.1.254

DHCP Lease Time: 1440 (2~129600 mins, or 0 means 1 day)mins.

Primary DNS: 8.8.8.8

Secondary DNS: 8.8.4.4

Save Refresh

Image 2. Specifying DNS servers for LAN clients

## UPnP router configuration (admin account)

To configure your router via UPnP LAN, log into your router (page 2). Go to **Application > UPNP and DLNA**. Tick **Enable UPnP/DLNA**. Click **Save/Apply** (see image 3). UPnP can be used for easier and more convenient router configuration from an LAN client app. *PortMapper* Windows application is one example of such an app. If no UPnP application is used, UPnP should be unticked. The default UPnP setting is unticked. Please bear in mind that after a router reboot or factory reset, any changes made via UPnP will be removed from router configuration.

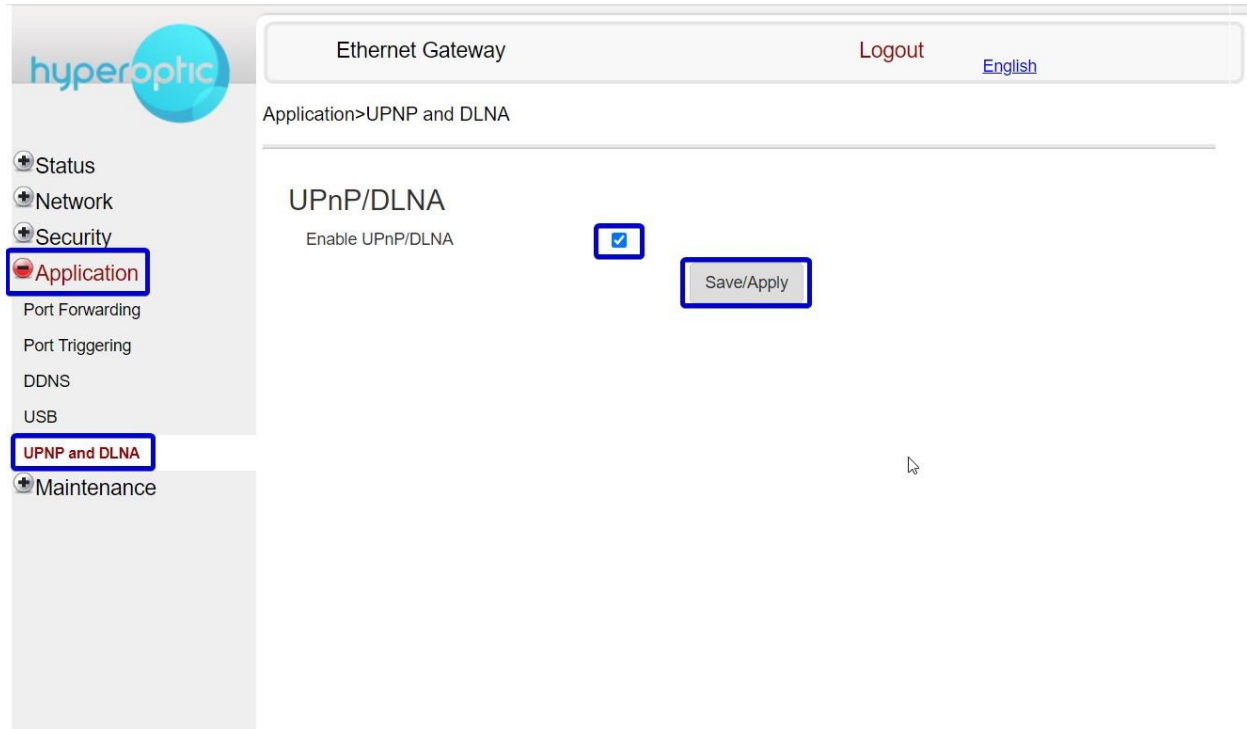


Image 3. Enabling UPnP

## LAN clients (admin account)

To check the number of LAN clients connected, log into your router (page 2). To check leased IPv4 addresses and to check which clients are connected via ethernet or via Wi-Fi, navigate to section **Status > Home Networking** (see image 4). The **Local Devices** section will show all connected devices (i.e. all devices using the router's Wi-Fi and/or Ethernet network). The list of connected devices is refreshed every 60 seconds.

Status

Overview

Device Information

LAN Status

WAN Status

WAN Status IPv6

Home Networking

Statistics

Voice Information

Network

Security

Application

Maintenance

### Local Interface

Connection Type	Connected Devices	Setting
Ethernet	2	
Wireless (2.4GHz)	0	<a href="#">Setting</a>
Wireless (5GHz)	0	<a href="#">Setting</a>

### Wireless Settings (2.4GHz)

Network Name	3377 Hyperoptic Fibre Broz	NOKIA-3377-2	NOKIA-3377-3	NOKIA-3377-4
Access Point	08:9c:86:9b:3e:6d	62:9c:86:9b:3e:6e	62:9c:86:9b:3e:6f	62:9c:86:9b:3e:6c

### Wireless Settings (5GHz)

Network Name	3377 Hyperoptic Fibre Broz	NOKIA-3377-2	NOKIA-3377-3	NOKIA-3377-4
Access Point	08:9c:86:9b:3e:71	6a:9c:86:9b:3e:72	6a:9c:86:9b:3e:73	6a:9c:86:9b:3e:70

### Local Devices

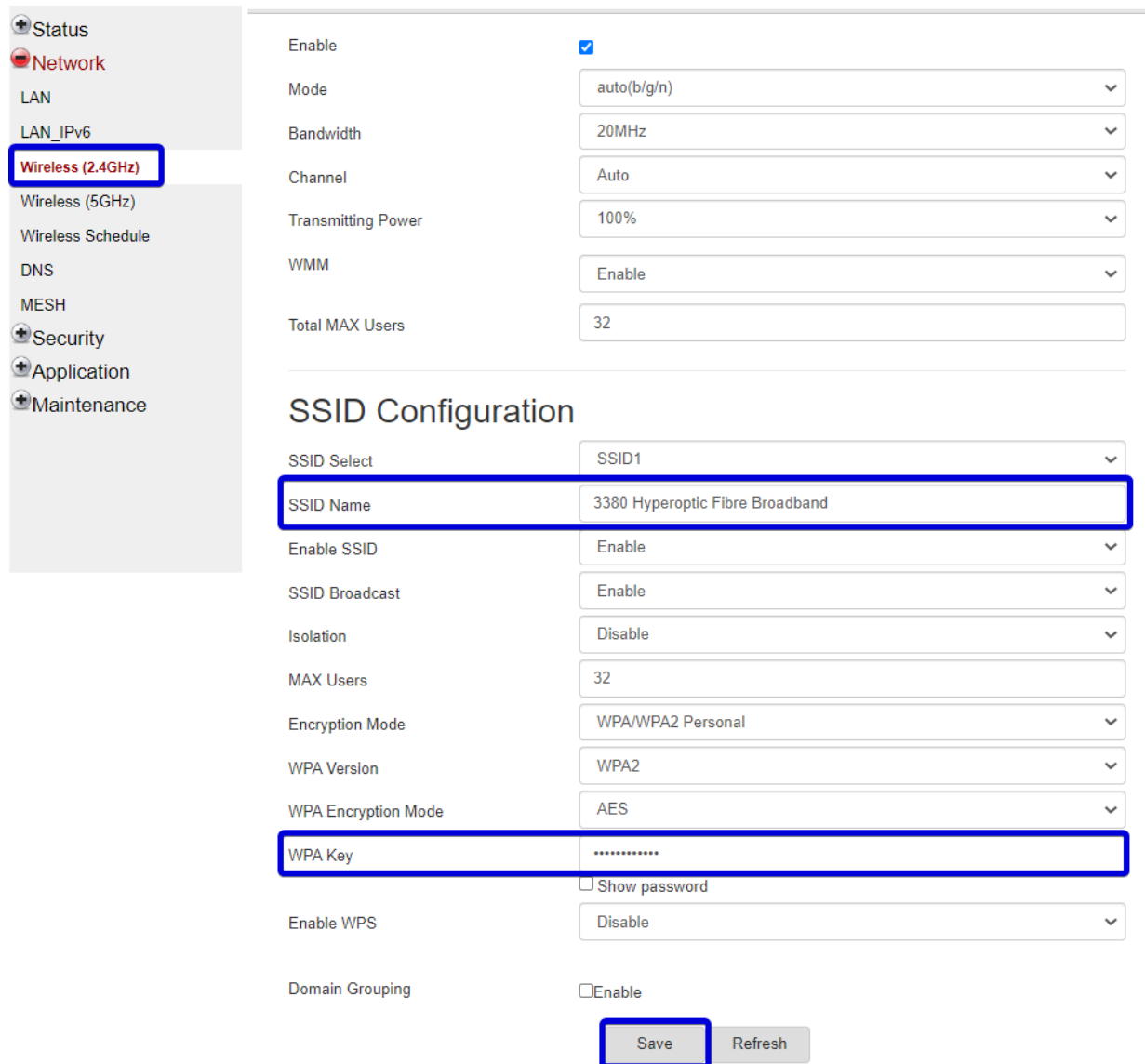
Status	Connection Type	Device Name	IPv4 Address	Hardware Address	IP Address Allocation	Delete
Active	Ethernet	DESKTOP-0V2KB95	192.168.1.100	2c:ea:7f:04:0c:d8	DHCP	<a href="#">Delete</a>

Image 4. List of WLAN and Ethernet LAN clients

## Wi-Fi password and SSID change (admin account)

To change your SSID (i.e. the name of your Wi-Fi network) and/or Wi-Fi password, log into your router (page 2) and go to **Network > Wireless (2.4GHz)** (see image 5) or **Network > Wireless (5GHz)** (see image 6).

**SSID name** and **WPA Key** can be changed as desired. Don't forget to click **Save**.



Status	Enable	<input checked="" type="checkbox"/>
Network	Mode	auto(b/g/n)
LAN	Bandwidth	20MHz
LAN_IPv6	Channel	Auto
<b>Wireless (2.4GHz)</b>	Transmitting Power	100%
Wireless (5GHz)	WMM	Enable
Wireless Schedule	Total MAX Users	32
DNS		
MESH		
Security		
Application		
Maintenance		

### SSID Configuration

SSID Select	SSID1
SSID Name	3380 Hyperoptic Fibre Broadband
Enable SSID	Enable
SSID Broadcast	Enable
Isolation	Disable
MAX Users	32
Encryption Mode	WPA/WPA2 Personal
WPA Version	WPA2
WPA Encryption Mode	AES
WPA Key	*****
	<input type="checkbox"/> Show password
Enable WPS	Disable
Domain Grouping	<input type="checkbox"/> Enable

**Save** Refresh

Image 5. Configuration of 2.4GHz Wi-Fi parameters

hyperoptic

Status

Network

LAN

LAN\_IPv6

Wireless (2.4GHz)

Wireless (5GHz)

Wireless Schedule

DNS

MESH

Security

Application

Maintenance

Ethernet Gateway

Logout

English

Network>Wireless (5GHz)

Enable

☒

Bandwidth

Auto

Channel

Auto

Transmitting Power

100%

WMM

Enable

Enable MU-MIMO

Disable

Total MAX Users

32

SSID Configuration

SSID Select

SSID5

SSID Name

3380 Hyperoptic Fibre Broadband

Enable SSID

Enable

SSID Broadcast

Enable

Isolation

Disable

MAX Users

32

Encryption Mode

WPA2-AES

WPA Key

\*\*\*\*\*

Show password

☐

Enable WPS

Disable

Domain Grouping

☐Enable

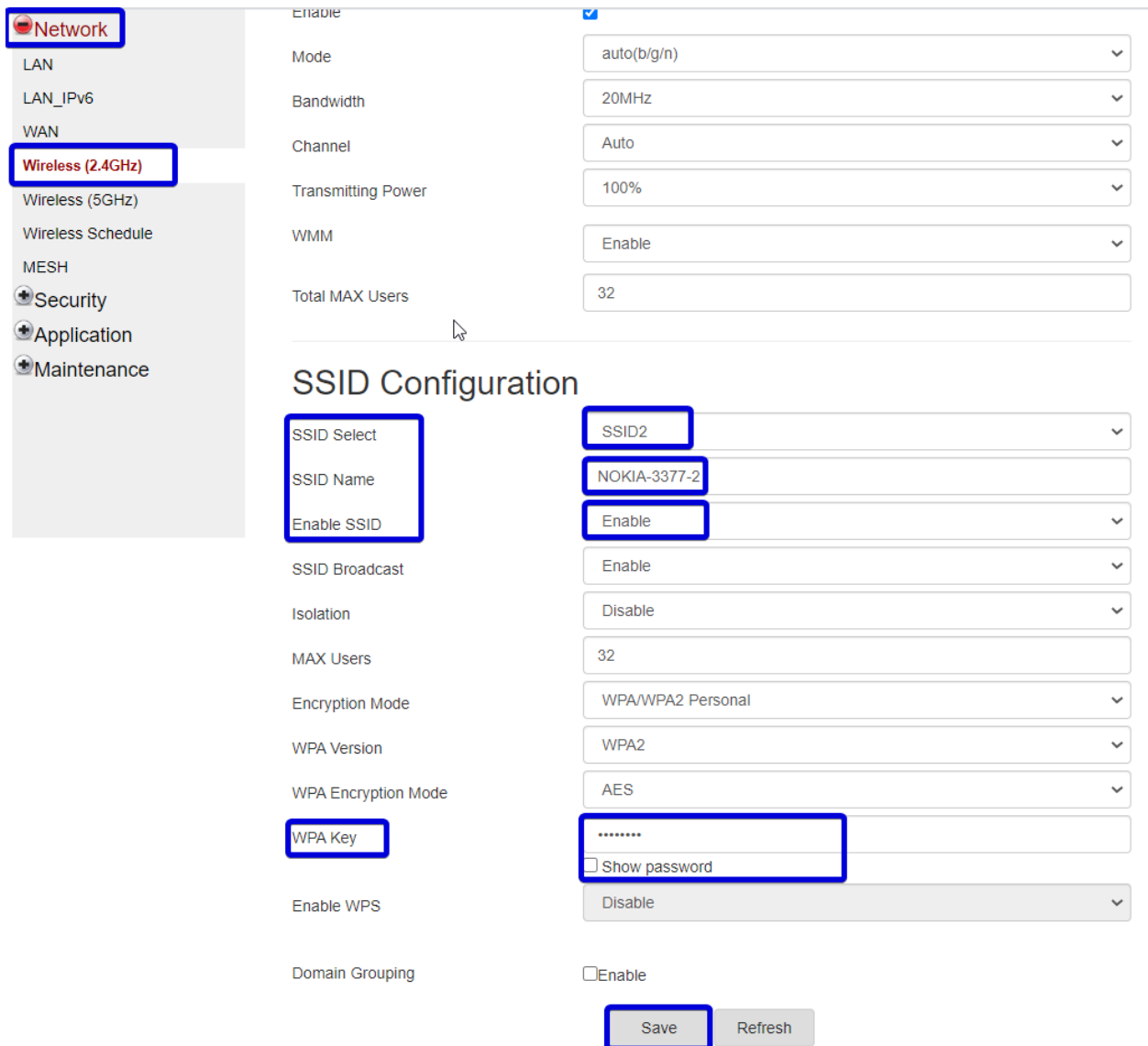
Save

Refresh

Image 6. Configuration of 5GHz Wi-Fi parameters

## Creating, disabling and changing settings for SSIDs (admin account)

To create a new 2.4GHz SSID, log into your router (page 2) and go to **Network > Wireless (2.4GHz)**. Select **SSID2**, **SSID3** or **SSID4** from the dropdown menu of field **SSID Select**. Once new SSID is selected, you can change the name in the **SSID Name** field. You can set the password for that specific SSID in the **WPA Key** field. The SSID needs to be enabled by selecting the **Enable** option from the **Enable SSID** dropdown menu. If the SSID needs to be disabled, select **Disable** from the **Enable SSID** dropdown menu. Don't forget to click **Save**. See image 7.



The screenshot displays the 'Wireless (2.4GHz)' configuration page in the Nokia HA-140W-B admin interface. The left sidebar shows the navigation menu with 'Network' and 'Wireless (2.4GHz)' highlighted. The main configuration area is titled 'SSID Configuration' and contains the following fields and settings:

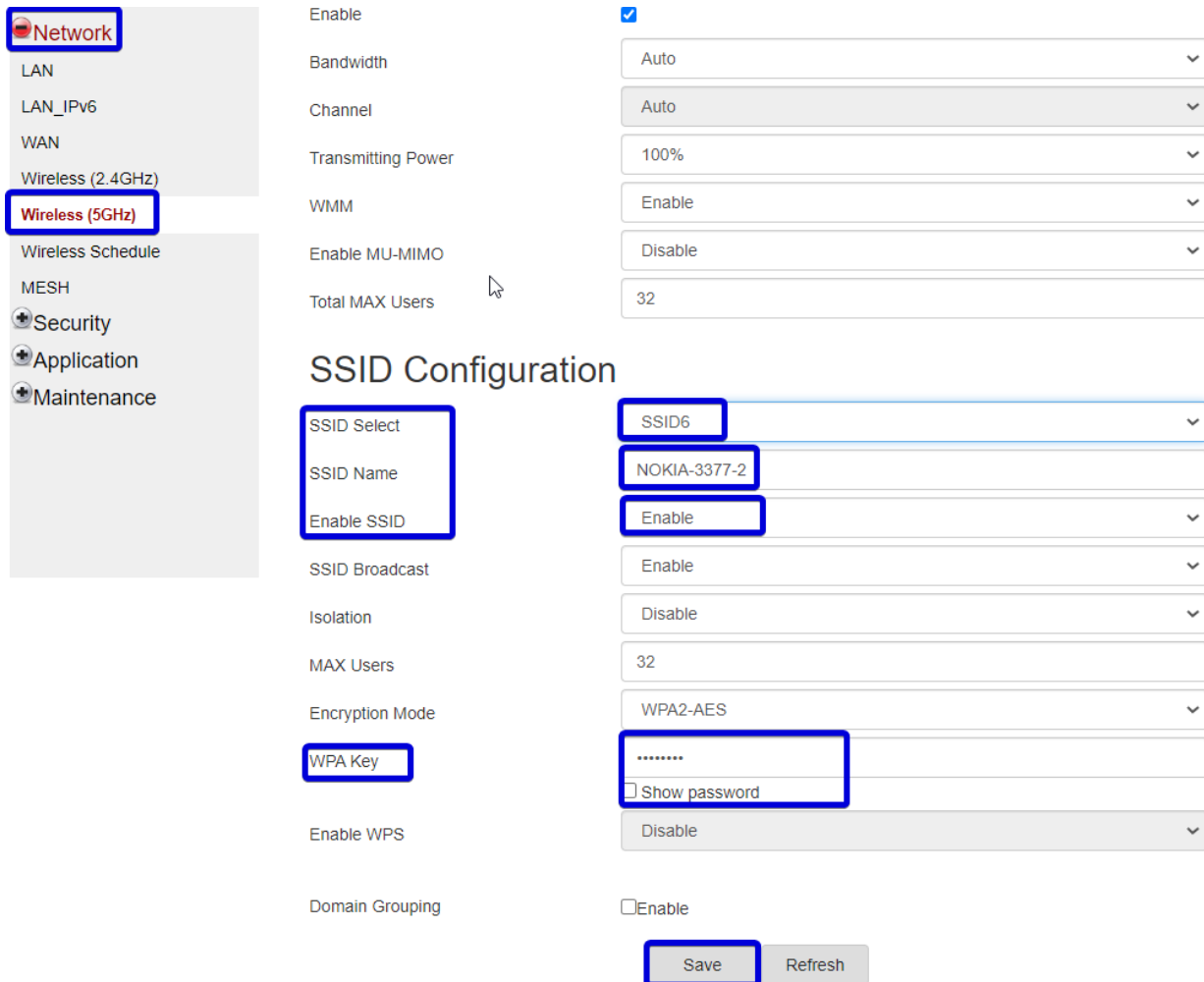
- Enable:** ☒
- Mode:** auto(b/g/n)
- Bandwidth:** 20MHz
- Channel:** Auto
- Transmitting Power:** 100%
- WMM:** Enable
- Total MAX Users:** 32
- SSID Select:** SSID2
- SSID Name:** NOKIA-3377-2
- Enable SSID:** Enable
- SSID Broadcast:** Enable
- Isolation:** Disable
- MAX Users:** 32
- Encryption Mode:** WPA/WPA2 Personal
- WPA Version:** WPA2
- WPA Encryption Mode:** AES
- WPA Key:** [Redacted password field]
- Enable WPS:** Disable
- Domain Grouping:** ☐ Enable

At the bottom of the page, there are two buttons: **Save** and **Refresh**.

Image 7. Creation and modification of new 2.4GHz SSID



To create a new 5GHz SSID, log into your router (page 2) and go to **Network > Wireless (5GHz)**. Select **SSID6**, **SSID7** or **SSID8** from the dropdown menu of field **SSID Select**. Once new SSID is selected, you can change the name in the **SSID Name** field. You can set the password for that specific SSID in the **WPA Key** field. The SSID needs to be enabled by selecting the **Enable** option from the **Enable SSID** dropdown menu. If the SSID needs to be disabled, select **Disable** from the **Enable SSID** dropdown menu. Don't forget to click **Save**. See image 8.



Enable	<input checked="" type="checkbox"/>
Bandwidth	Auto
Channel	Auto
Transmitting Power	100%
WMM	Enable
Enable MU-MIMO	Disable
Total MAX Users	32

### SSID Configuration

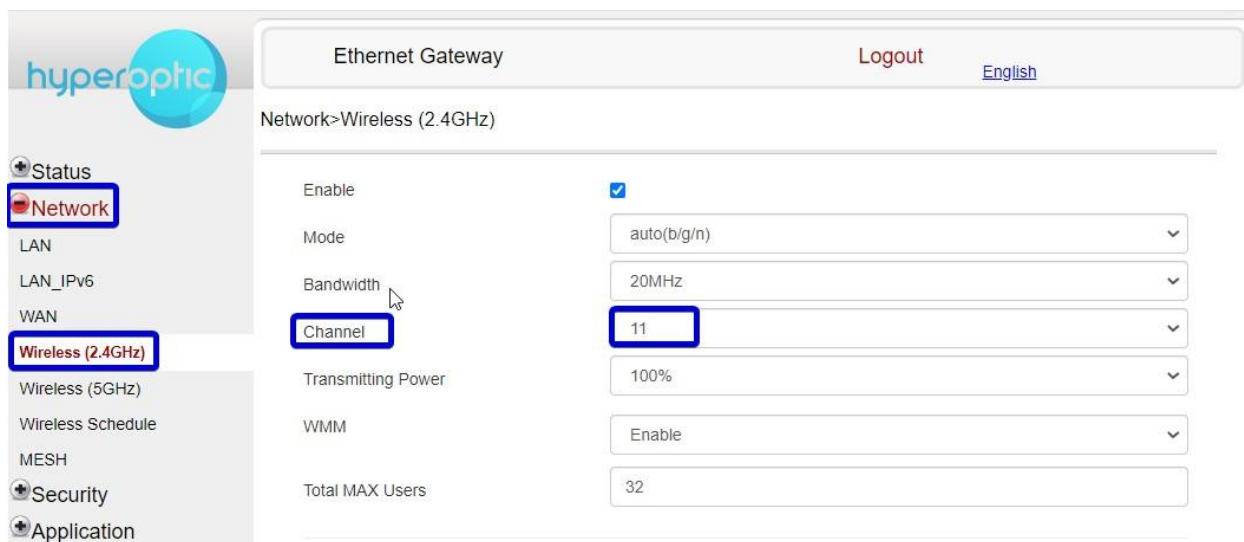
SSID Select	SSID6
SSID Name	NOKIA-3377-2
Enable SSID	Enable
SSID Broadcast	Enable
Isolation	Disable
MAX Users	32
Encryption Mode	WPA2-AES
WPA Key	..... <input type="checkbox"/> Show password
Enable WPS	Disable
Domain Grouping	<input type="checkbox"/> Enable

Image 8. Creation and modification of new 5GHz SSID

## Wi-Fi channel change (admin account)

Your router continually and automatically changes Wi-Fi channel to minimise the level of interference to your connection. We strongly recommend keeping the automatic channel selection as is, but should you wish to change it manually, you can.

To change the operating channel of the 2.4GHz Wi-Fi network, log into your router (page 2) and go to **Network > Wireless (2.4GHz)**. In the **Channel** field, select your chosen channel from the dropdown menu (e.g. 11). Don't forget to click save. See image 9.

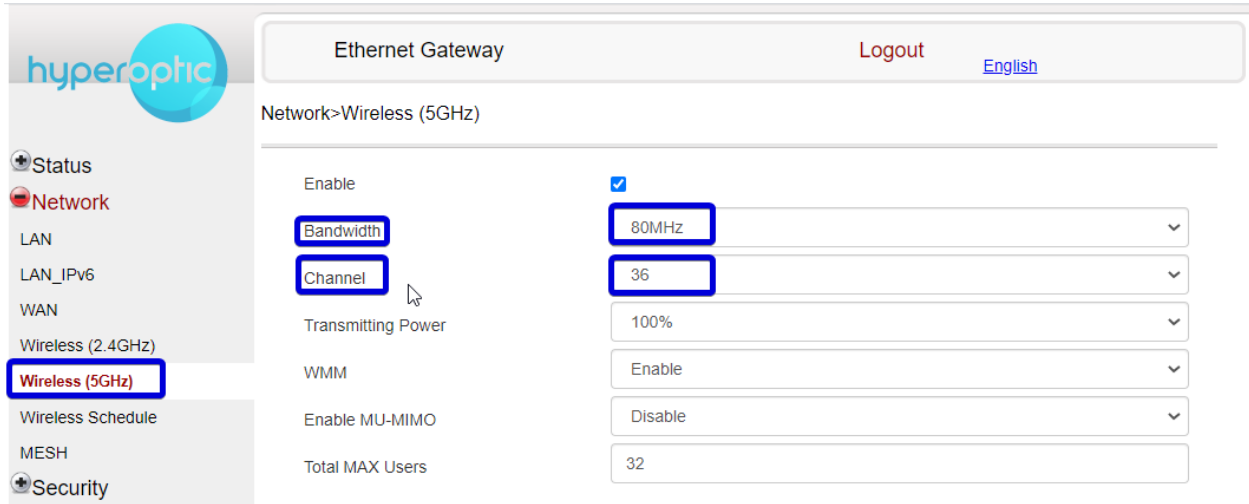


The screenshot shows the admin interface for the Nokia HA-140W-B router. The left sidebar contains a menu with the following items: Status, Network (highlighted with a red box), LAN, LAN\_IPv6, WAN, Wireless (2.4GHz) (highlighted with a red box), Wireless (5GHz), Wireless Schedule, MESH, Security, and Application. The main content area is titled 'Ethernet Gateway' and 'Logout' (with a link to 'English'). Below this, the breadcrumb 'Network > Wireless (2.4GHz)' is shown. The settings for the 2.4GHz Wi-Fi network are displayed as follows:

Setting	Value
Enable	<input checked="" type="checkbox"/>
Mode	auto(b/g/n)
Bandwidth	20MHz
Channel	11
Transmitting Power	100%
WMM	Enable
Total MAX Users	32

Image 9. Channel change in 2.4GHz Wi-Fi band

For the best performance on the 5GHz Wi-Fi network, select 80MHz in the **Bandwidth** field. After **Bandwidth** parameter is chosen from the dropdown menu, select channel from the section **Channel** (e.g. 36). See image 10. Click **Save** to apply changes.



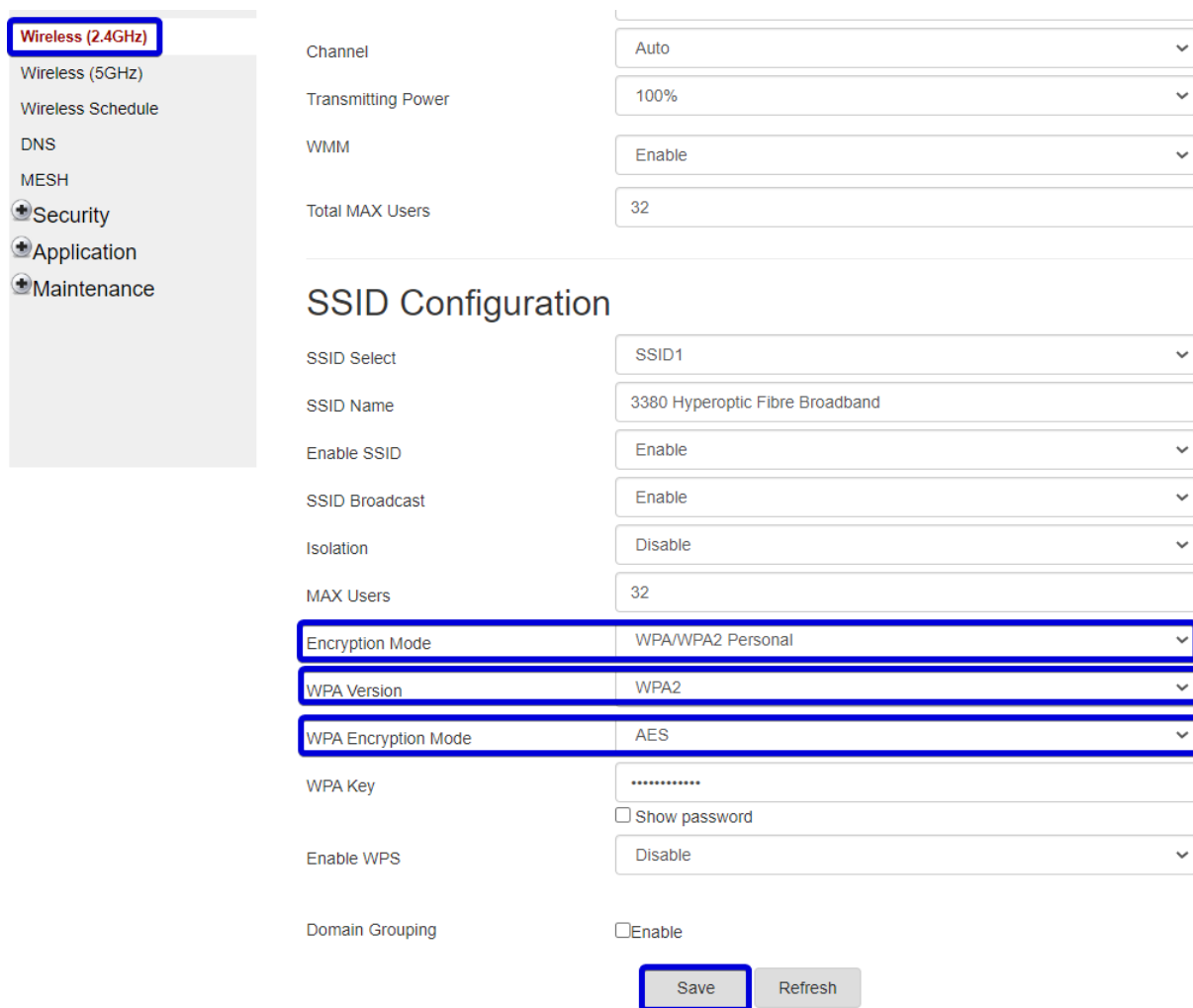
The screenshot displays the 'Ethernet Gateway' admin interface. The left sidebar shows the navigation menu with 'Wireless (5GHz)' selected. The main content area is titled 'Network>Wireless (5GHz)'. The settings are as follows:

Setting	Value
Enable	<input checked="" type="checkbox"/>
Bandwidth	80MHz
Channel	36
Transmitting Power	100%
WMM	Enable
Enable MU-MIMO	Disable
Total MAX Users	32

Image 10. Channel change in 5GHz Wi-Fi band

## Wi-Fi security (admin account)

You can change the Wi-Fi security settings for each SSID. To do this, log into your router (page 2) and go to **Network > Wireless (2.4GHz)**. Types of encryption parameters are seen in image 11. After selecting an **Encryption Mode** from the drop-down menu, click **Save**. By default, an advanced encryption algorithm is used. Similar settings exist in **Network > Wireless (5GHz)** section of router web UI. **We strongly recommend using only WPA2-AES for 2.4GHz and 5GHz.**



Wireless (2.4GHz)	Channel	Auto
Wireless (5GHz)	Transmitting Power	100%
Wireless Schedule	WMM	Enable
DNS	Total MAX Users	32
MESH		
Security		
Application		
Maintenance		

### SSID Configuration

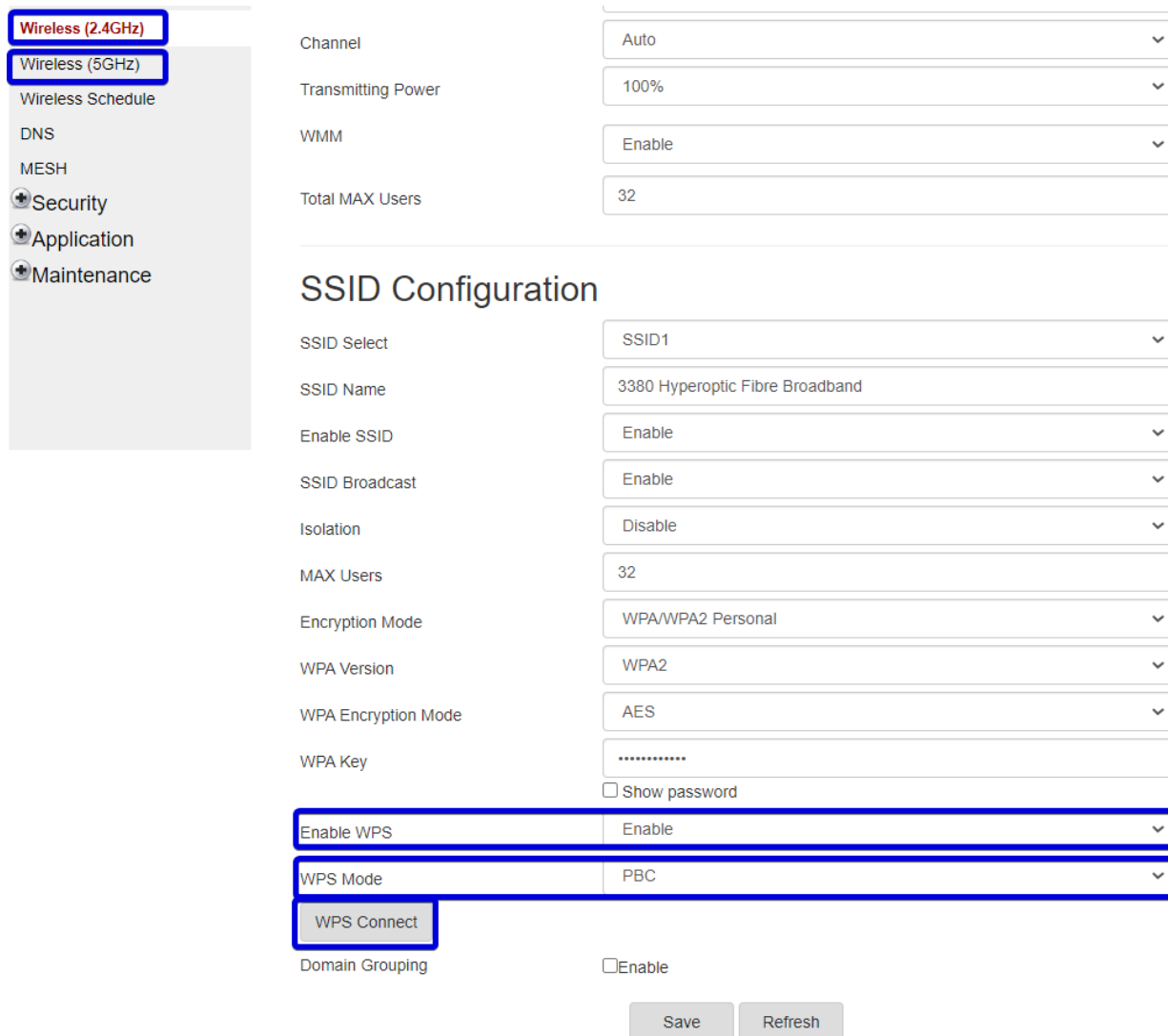
SSID Select	SSID1
SSID Name	3380 Hyperoptic Fibre Broadband
Enable SSID	Enable
SSID Broadcast	Enable
Isolation	Disable
MAX Users	32
Encryption Mode	WPA/WPA2 Personal
WPA Version	WPA2
WPA Encryption Mode	AES
WPA Key	.....
	<input type="checkbox"/> Show password
Enable WPS	Disable
Domain Grouping	<input type="checkbox"/> Enable

**Save** Refresh

Image 11. Encryption types per SSID

## WPS connection (admin account)

To allow LAN clients to connect to your Wi-Fi network without a password, log into your router (page 2) and go to **Wireless (2.4GHz)** or **Wireless (5GHz)**. **Enable** WPS. See image 12. For WPS Mode, select **PBC** and click **WPS Connect** button. After few seconds press the WPS button on the LAN device and they'll connect.



Wireless (2.4GHz)  
Wireless (5GHz)  
Wireless Schedule  
DNS  
MESH  
Security  
Application  
Maintenance

Channel: Auto  
Transmitting Power: 100%  
WMM: Enable  
Total MAX Users: 32

### SSID Configuration

SSID Select: SSID1  
SSID Name: 3380 Hyperoptic Fibre Broadband  
Enable SSID: Enable  
SSID Broadcast: Enable  
Isolation: Disable  
MAX Users: 32  
Encryption Mode: WPA/WPA2 Personal  
WPA Version: WPA2  
WPA Encryption Mode: AES  
WPA Key: .....  
☐ Show password

Enable WPS: Enable  
WPS Mode: PBC  
WPS Connect

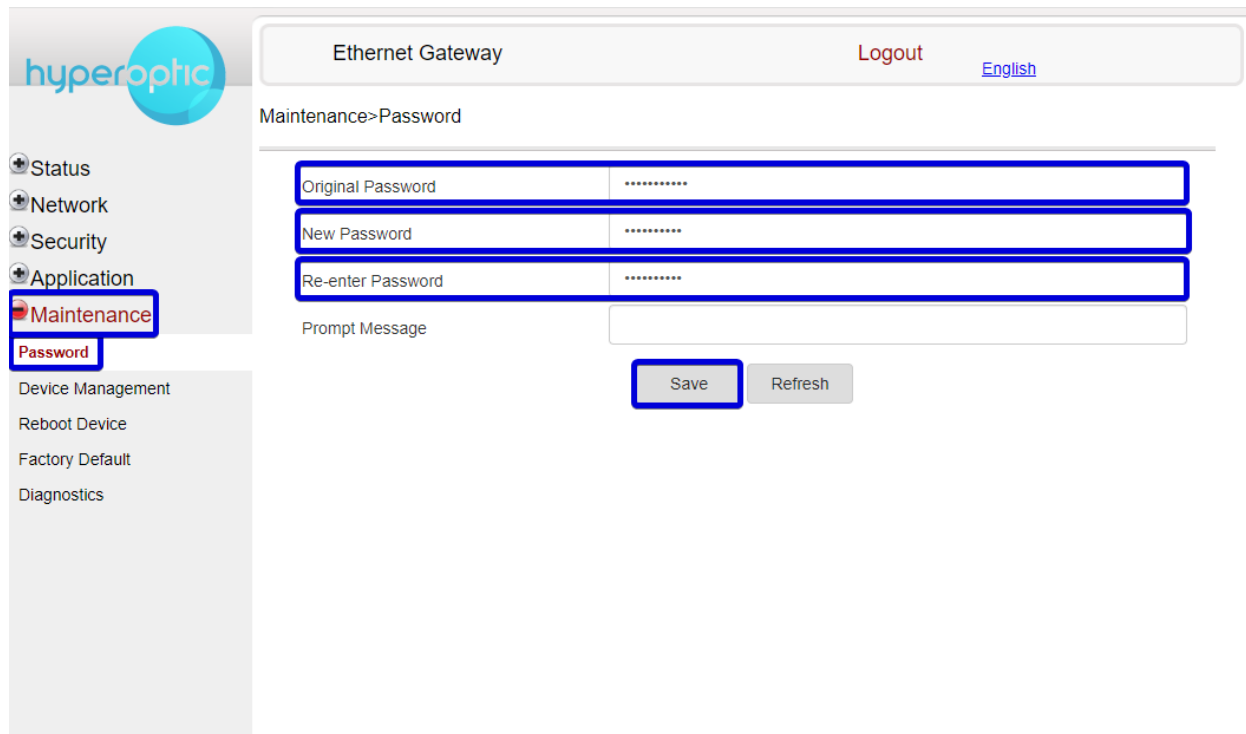
Domain Grouping ☐ Enable

Save Refresh

Image 12. Connecting LAN clients via WPS

## Change of admin credentials (admin account)

To change the router admin login password, log into your router (page 2) and go to **Maintenance > Password**. See image 13. You can find the original password on the router itself. After entering and re-entering the new password, click **Save**.



hyperoptic

Ethernet Gateway Logout English

Maintenance>Password

Original Password

New Password

Re-enter Password

Prompt Message

Save Refresh

Status

Network

Security

Application

Maintenance

Password

Device Management

Reboot Device

Factory Default

Diagnostics

Image 13. Changing admin password

After the password's been changed, you'll see a confirmation screen (see image 14).

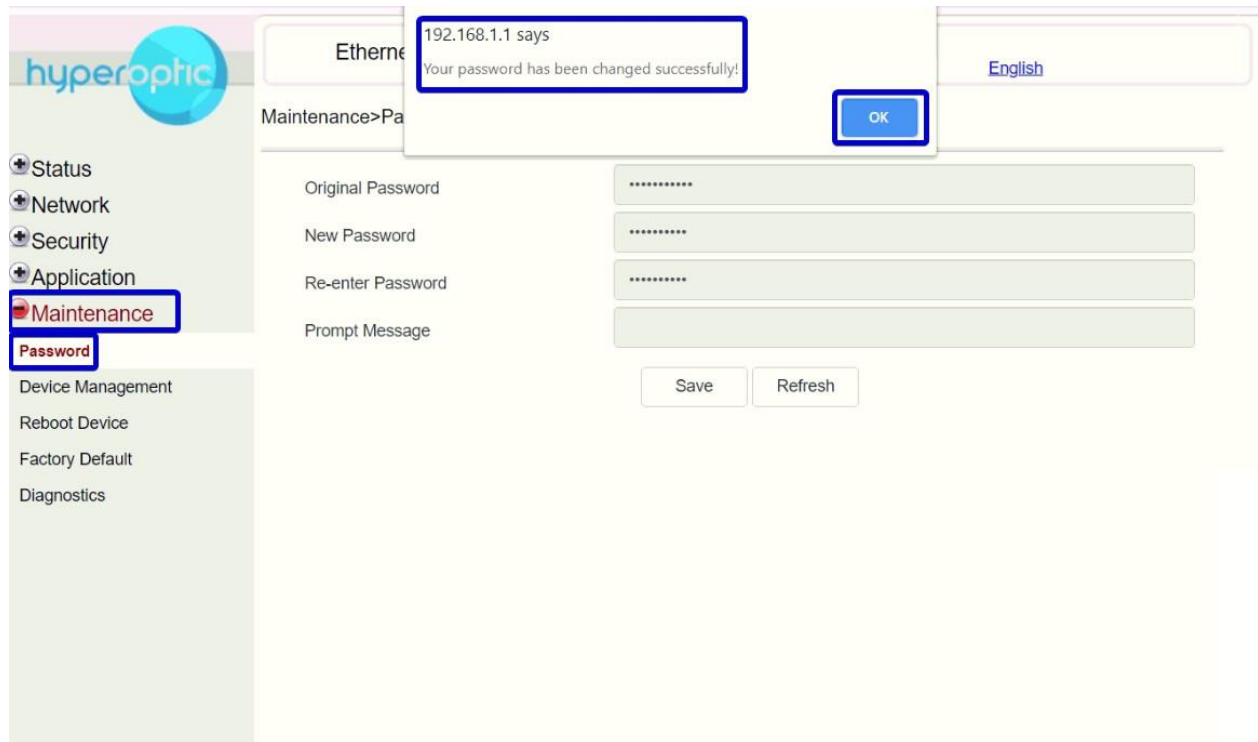


Image 14. Confirmation that password is changed successfully

## Reboot and Factory Reset (admin account)

To reboot your router, log in (page 2) and go to **Maintenance > Reboot Device**. Click on **Reboot** (see image 15).

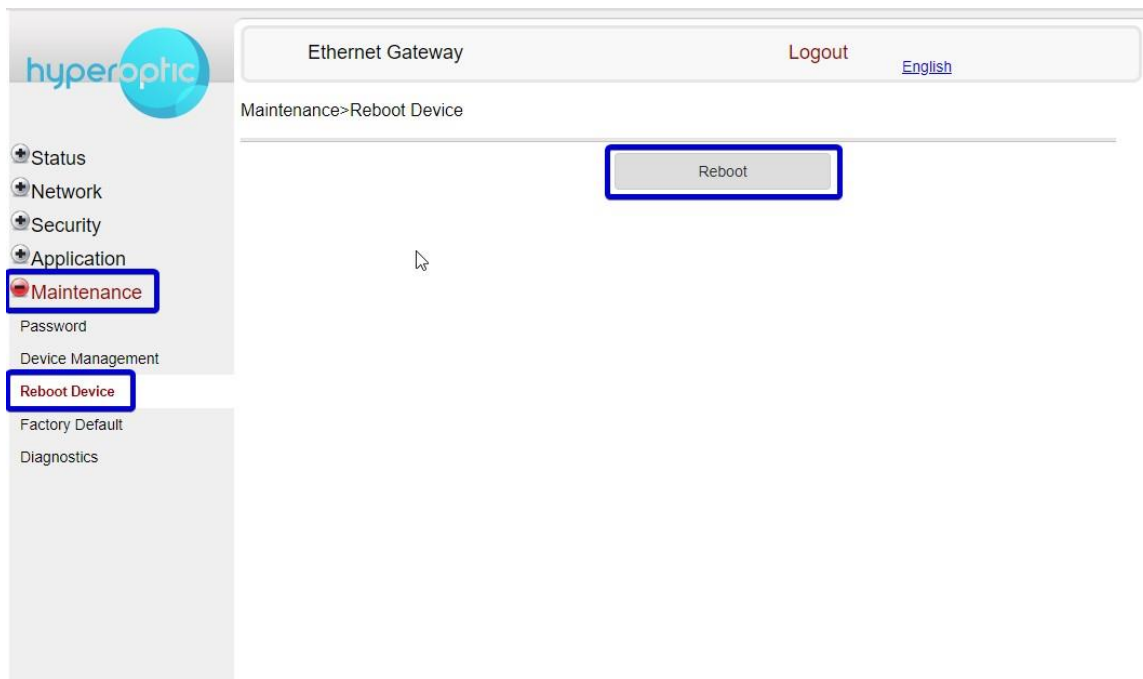


Image 15. Reboot and Factory reset buttons

Confirm the reboot by clicking **OK** (see image 16).

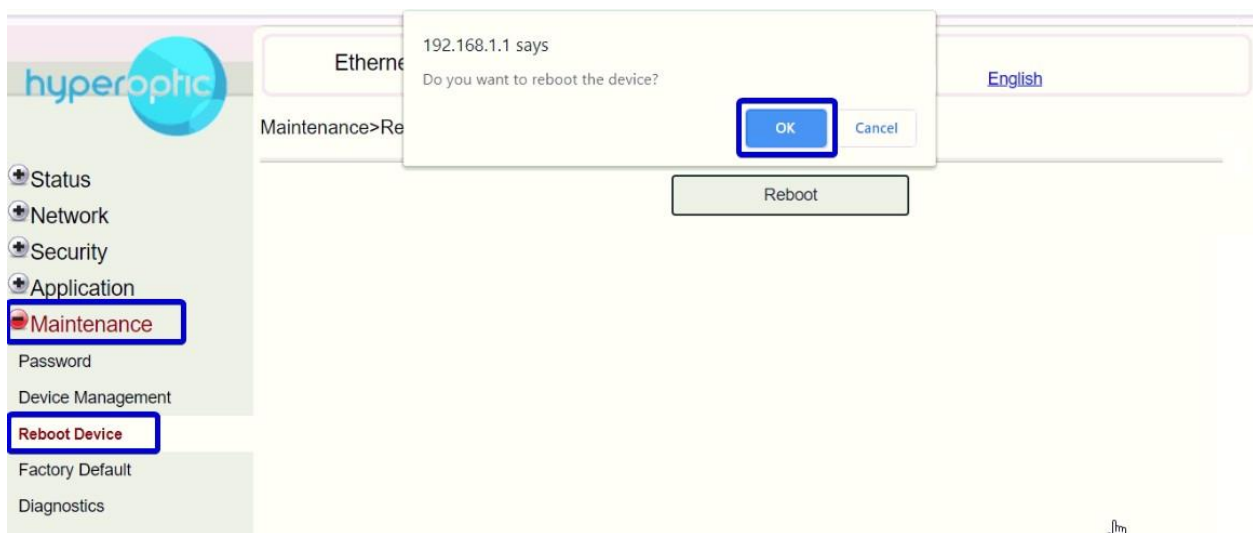


Image 16. Confirmation of rebooting



To perform a factory reset on your router, log in (page 2) and go to **Maintenance > Factory Default**. Click on **Factory Default** (see image 17). Please avoid using factory reset often as it can shorten the life of a router. Please also bear in mind that factory reset will override any of your personalised or previously saved settings.

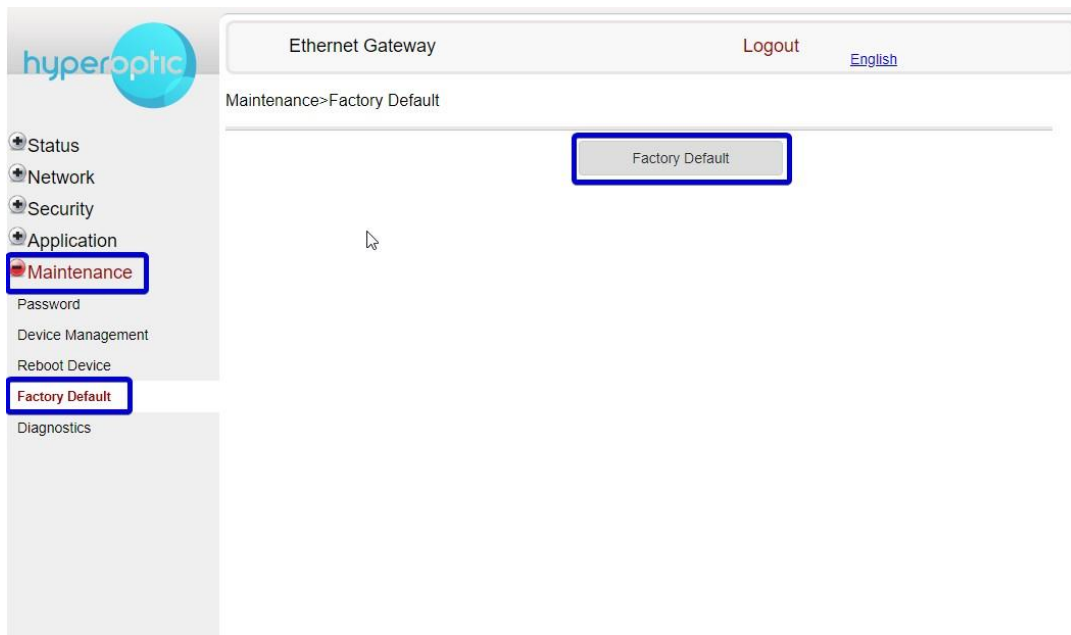


Image 17. Factory Default button

Confirm the factory reset by clicking **OK** (see image 18).

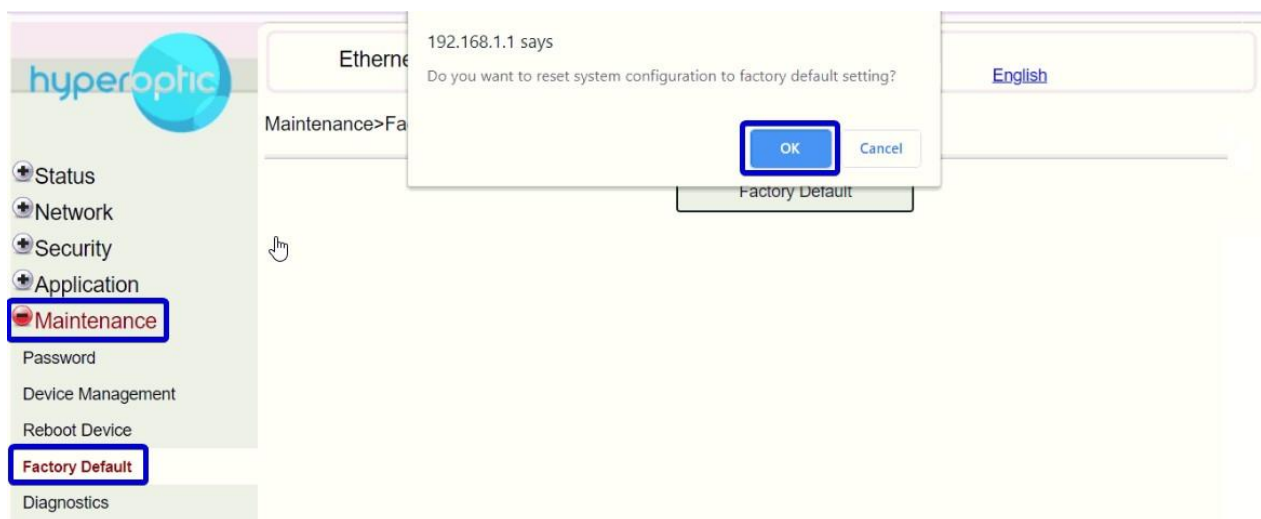


Image 18. Confirmation of factory reset

## USB storage (admin account)

You can access USB flash storage from a LAN client and from the internet side (through WAN interface). To grant access to a USB flash drive, log into your router (page 2) and go to **Application > USB**. Tick **Enable FTP Server** to allow access from LAN clients. Set FTP password and username in appropriate fields. To allow access from the internet side, tick **Enable SFTP Server** and **Enable SFTP for Remote Access**. Set appropriate password and username for SFTP service. Click **Save** (see image 19).

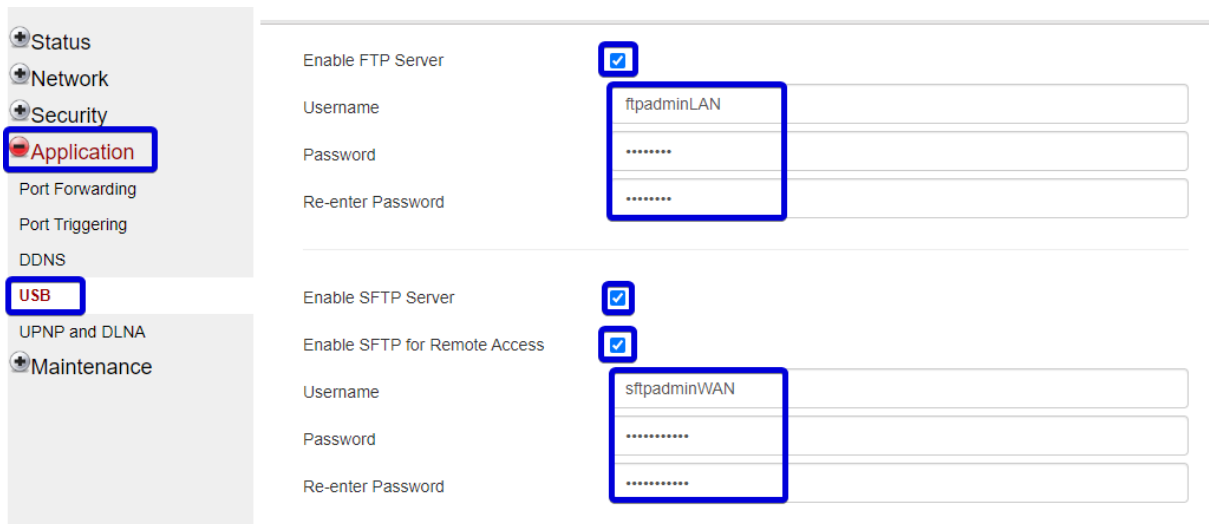


Image 19. Enabling FTP access to USB flash

Access to USB flash drive from LAN can be seen in image 20. FTP communicates over **TCP port 21**.

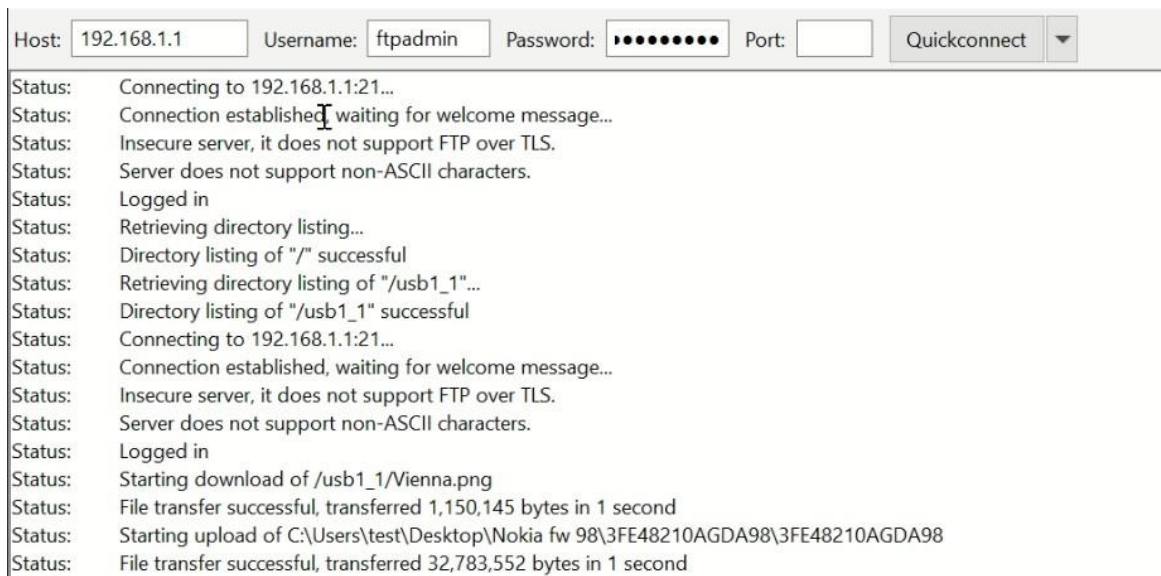


Image 20. Access to USB flash drive via FileZilla client app (from LAN)

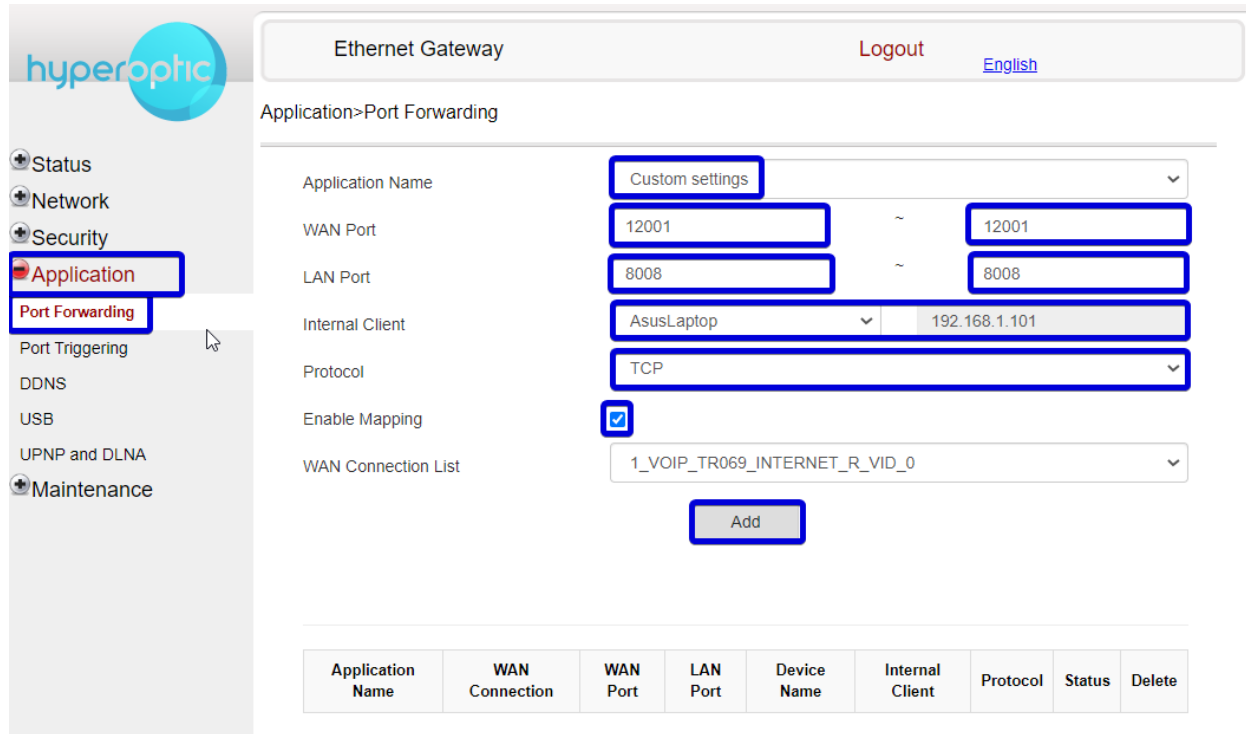
Access to USB flash drive from WAN can be seen image 21. SFTP communicates over **TCP port 2122**.



Image 21. Access to USB flash drive via FileZilla client app (from WAN)

## Port forwarding (admin account)

Port forwarding can be used to establish a home-based FTP server, web server or similar kind of a server. The server is located on the LAN client (e.g. desktop computer or laptop). To set Port forwarding, log into your router (page 2) and go to **Application > Port Forwarding**. See image 22.



Application Name	WAN Connection	WAN Port	LAN Port	Device Name	Internal Client	Protocol	Status	Delete
Custom settings	1_VOIP_TR069_INTERNET_R_VID_0	12001	8008	AsusLaptop	192.168.1.101	TCP		

Image 22. Port forwarding configured with port mapping (WAN port maps to LAN port)

To set a specific port forwarding rule, select **Custom settings** for **Application Name** line. In the WAN Port field, set an arbitrary port on WAN interface of a router (e.g. TCP port 12001). All requests coming to the server from the internet side will have a destination IP address of the router itself, and a destination port as listed in **WAN Port** fields. For **LAN port** fields, list the port on which the LAN client server app is running (in this case TCP port 8008). Select the appropriate LAN client (server machine) from the dropdown menu on **Internal Client**. **Protocol** is determined by the type of server application (in this case **TCP**). Tick **Enable Mapping** and click **Add** to save the rule. Once rule is saved, you'll see the confirmation (see image 23).

WAN Connection	WAN Port	LAN Port	Device Name	Internal Client	Protocol	Status	Delete
1_VOIP_TR069_INTERNET_R_VID_0	12001~12001	8008~8008	AsusLaptop	192.168.1.101	TCP	ACTIVE	Delete

Image 23. Port forwarding rule confirmation

Similarly, ports on WAN and LAN side can be kept the same (see image 24). Image 24 shows the second way things can be configured. It's up to you whether you prefer to use the methods in image 22 or image 24.

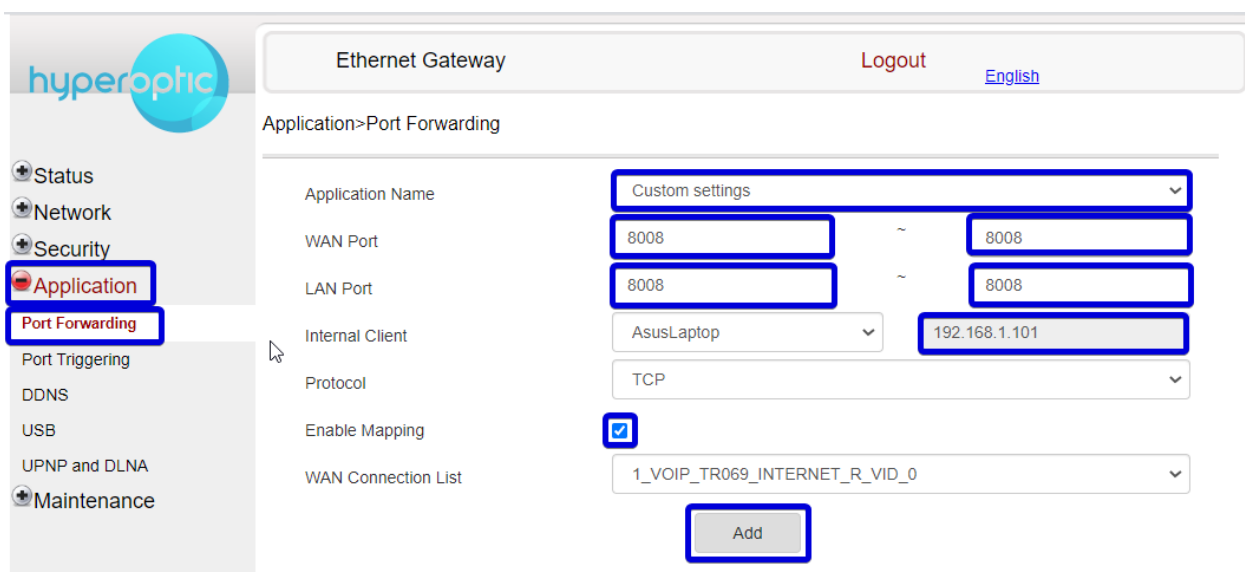


Image 24. Alternative approach of configuring port forwarding (LAN and WAN ports are the same)

Please also note that ports TCP 8080 and 443 **should never be used on WAN**, as these ports are reserved for Hyperoptic Ltd. remote management. If you'd like to use these ports on your server in a LAN, then you can use different ports on WAN as shown in Image 22 (e.g. you can use ports on WAN 12000, 12001 and map them to LAN ports 8080, 443 respectively).

A list of commonly used ports can be seen in image 25. For additional information on TCP/UDP port numbers, please refer to [https://en.wikipedia.org/wiki/List\\_of\\_TCP\\_and\\_UDP\\_port\\_numbers](https://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers)

Port Number(s)	Protocol	Application
20	TCP	FTP data
21	TCP	FTP control
22	TCP	SSH
23	TCP	Telnet
25	TCP	SMTP
53	UDP, TCP	DNS
67	UDP	DHCP Server
68	UDP	DHCP Client
69	UDP	TFTP
80	TCP	HTTP (WWW)
110	TCP	POP3
161	UDP	SNMP
443	TCP	SSL
514	UDP	Syslog
16,384 – 32,767	UDP	RTP (voice, video)

Image 25. List of commonly used ports

## DMZ (admin account)

Please be aware that devices placed in DMZ will not be affected by a router's firewall. Placing LAN devices in DMZ can therefore pose an IT security risk and this action should be taken with caution.

If a LAN device needs to be placed in a demilitarized zone, log into your router (page 2) and go to **Security > Firewall as seen in image 26**. Select **Advanced** option for **Security Level**. Click **Save** to apply settings.

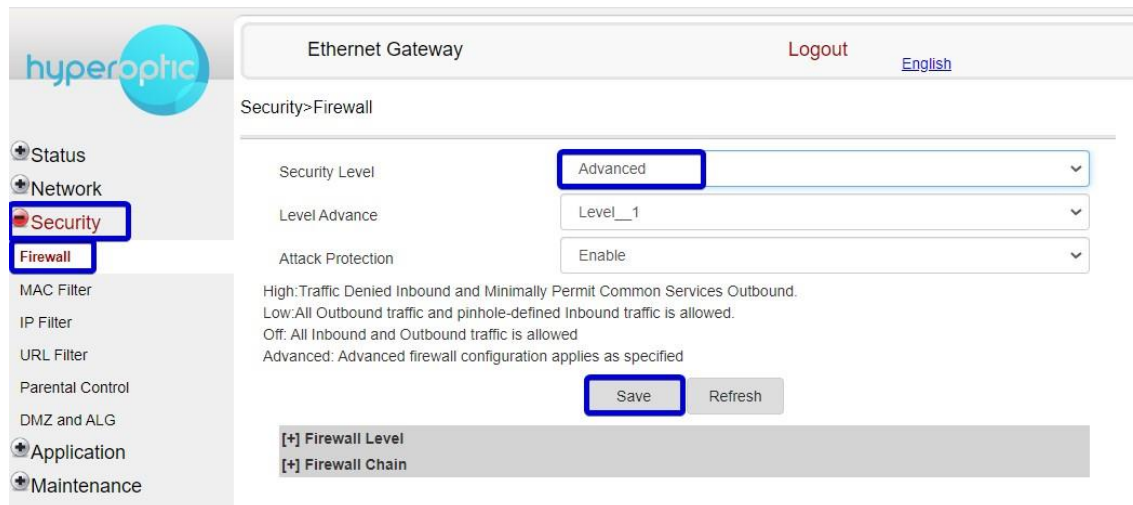


Image 26. Setting Firewall level to Advanced

Now, go to **Security > DMZ and ALG** (see image 27). Select LAN client from the **DMZ IP Address** dropdown menu. Tick **Enable DMZ** and click **Save DMZ**.

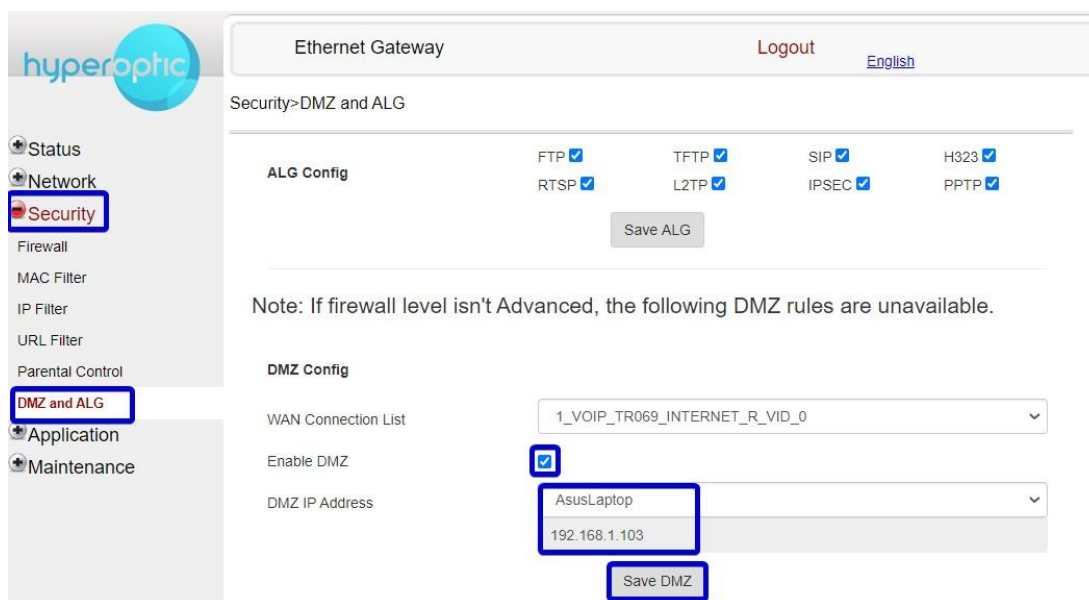


Image 27. Putting LAN client in DMZ

## DHCP Binding (Admin account)

Specific LAN clients can have the same IPv4 address all the time. To define which LAN client will have which IPv4 address, DHCP binding must be completed. To do this, log into your router (page 2) and go to **Network > LAN**. Enter the MAC address of the LAN client and the desired IPv4 address. Click **Add** button to make changes. See image 28.

### Static DHCP Entry

MAC Address

b0:6e:bf:4e:3e:5d

IPv4 Address

192.168.1.103

Add

MAC Address	IPv4 Address	Delete
-------------	--------------	--------

Image 28. Configuration of Static DHCP binding

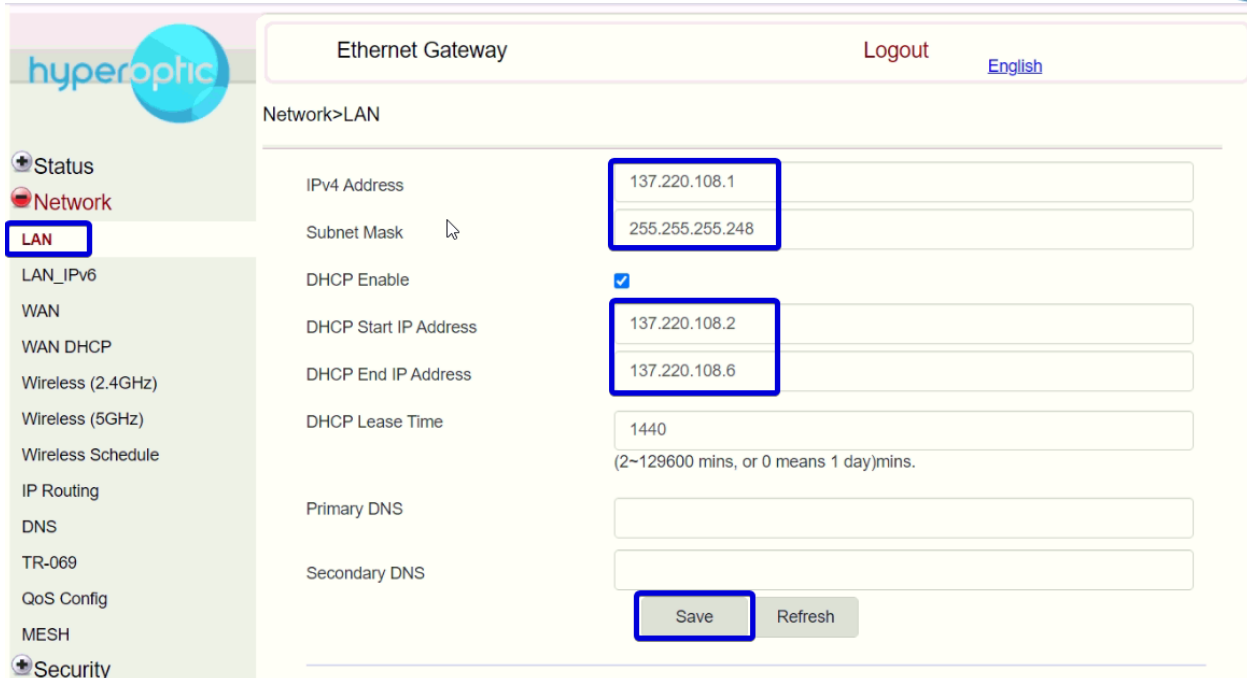
## Public IPv4 address block in LAN network

Navigate to section **Network > LAN**. Image 29 describes example of public block 137.220.108.0/29. Take first address from the IPv4 block and assign it to the router – **IPv4 Address** field. Rest of the available addresses define by setting **DHCP Start IP Address** and **DHCP End IP Address** values.

Table 1. Subnet mask values to be used in router config

Public IPv4 address block format	Subnet mask
x.x.x.x/ <b>32</b>	255.255.255. <b>255</b>
x.x.x.x/ <b>31</b>	255.255.255. <b>254</b>
x.x.x.x/ <b>30</b>	255.255.255. <b>252</b>
x.x.x.x/ <b>29</b>	255.255.255. <b>248</b>
x.x.x.x/ <b>28</b>	255.255.255. <b>240</b>





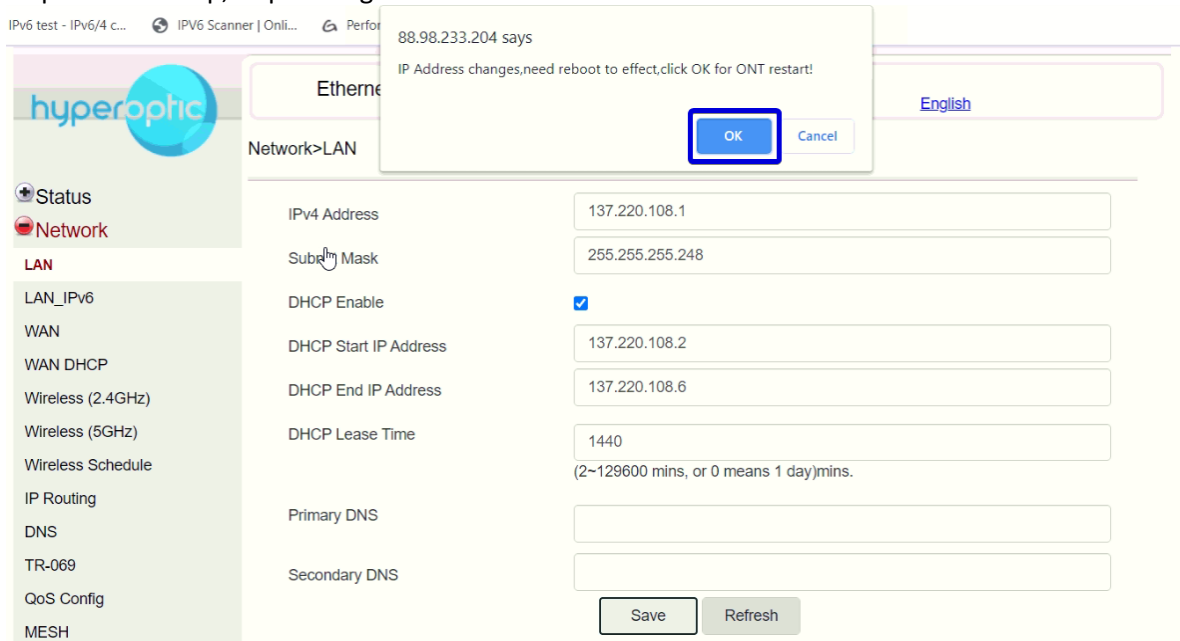
The screenshot shows the 'Ethernet Gateway' admin interface. The left sidebar has 'Network' selected, with 'LAN' highlighted. The main area is titled 'Network>LAN'. It contains the following fields:

- IPv4 Address: 137.220.108.1
- Subnet Mask: 255.255.255.248
- DHCP Enable: ☒
- DHCP Start IP Address: 137.220.108.2
- DHCP End IP Address: 137.220.108.6
- DHCP Lease Time: 1440 (2~129600 mins, or 0 means 1 day)mins.
- Primary DNS: (empty)
- Secondary DNS: (empty)

At the bottom right, there are 'Save' and 'Refresh' buttons. The 'Save' button is highlighted with a blue box.

Image 29. Setting public IPv4 addresses for the LAN network

Once fields are populated click on the **Save** button. Router will notify that reboot is needed, click **OK** button to complete the setup, as per image 30.



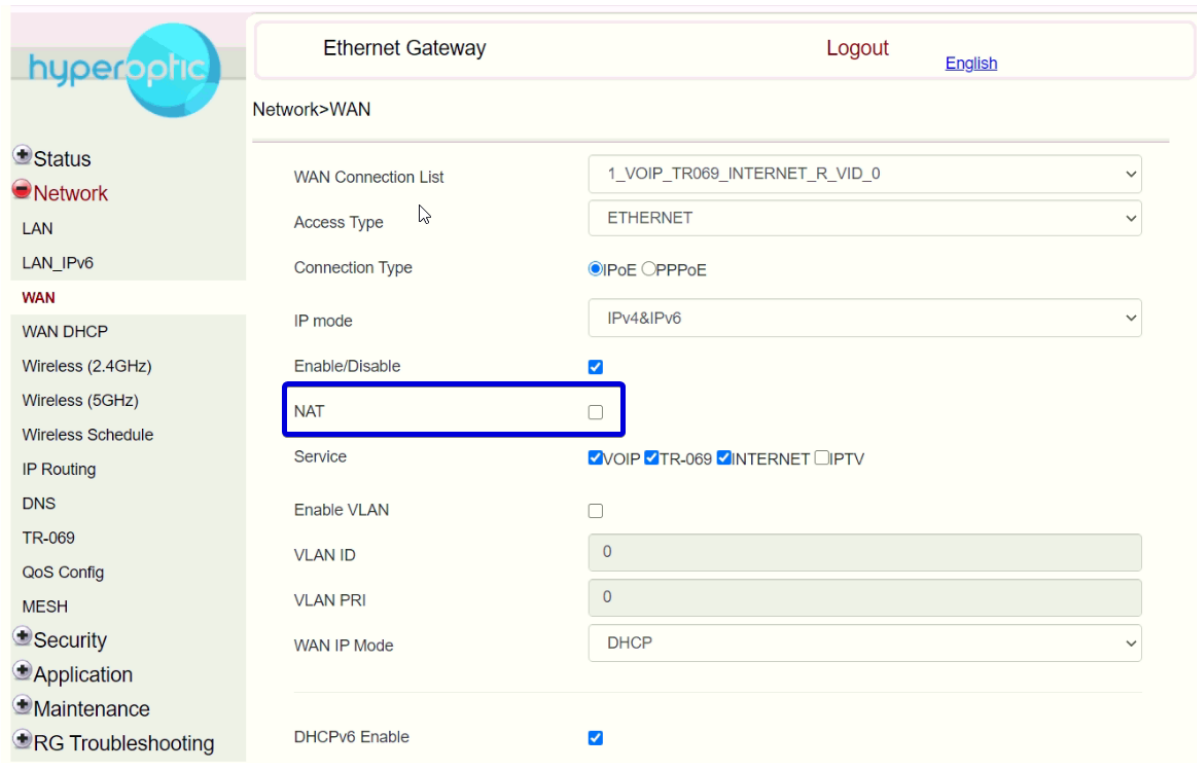
The screenshot shows the same 'Ethernet Gateway' admin interface as Image 29, but with a modal dialog box overlaid. The dialog box contains the following text:

88.98.233.204 says  
IP Address changes, need reboot to effect, click OK for ONT restart!

At the bottom of the dialog box are 'OK' and 'Cancel' buttons. The 'OK' button is highlighted with a blue box.

Image 30. Confirm reboot of the router

Last step is to disable NAT on the router (see image 31). To do this, navigate to section **Network > WAN** and uncheck **NAT** option. Click on the **Save** button at the bottom of the screen to save settings.



The screenshot shows the 'Ethernet Gateway' configuration page in the Nokia HA-140W-B admin interface. The left sidebar contains a navigation menu with the following items: Status, Network (highlighted), LAN, LAN\_IPv6, WAN (highlighted), WAN DHCP, Wireless (2.4GHz), Wireless (5GHz), Wireless Schedule, IP Routing, DNS, TR-069, QoS Config, MESH, Security, Application, Maintenance, and RG Troubleshooting. The main content area is titled 'Ethernet Gateway' and includes a 'Logout' link and a language selector set to 'English'. Below the title, the breadcrumb 'Network>WAN' is shown. The configuration fields are as follows:

Field	Value
WAN Connection List	1_VOIP_TR069_INTERNET_R_VID_0
Access Type	ETHERNET
Connection Type	<input checked="" type="radio"/> IPoE <input type="radio"/> PPPoE
IP mode	IPv4&IPv6
Enable/Disable	<input checked="" type="checkbox"/>
NAT	<input type="checkbox"/> (highlighted with a blue box)
Service	<input checked="" type="checkbox"/> VOIP <input checked="" type="checkbox"/> TR-069 <input checked="" type="checkbox"/> INTERNET <input type="checkbox"/> IPTV
Enable VLAN	<input type="checkbox"/>
VLAN ID	0
VLAN PRI	0
WAN IP Mode	DHCP
DHCPv6 Enable	<input checked="" type="checkbox"/>

Image 31. Disabling NAT on the router