

APPLICATION NOTE

APNUS013 NAT Configuration example *For WaveOS*

May 2020 – Rev. A1

CONFIGURING A WAVEOS PRODUCT IN NAT MODE

Desired NAT configuration:

- Private network (LAN): 192.168.100.100/24
- Public network (WLAN): 192.168.1.10/24

Translation rules:

- PLC_MASTER: TCP 192.168.1.10: 8080 translated to 192.168.100.101: 80
- PLC_IO : UDP 192.168.1.10: 4200 translated to 192.168.100.101: 4200

Private side (LAN):

Default gateway = 192.168.100.100 (or route 192.168.1.0/24 to 192.168.100.100)

After configuring the WiFi settings, go to **SETUP/NETWORK** and edit the default network (**lan**):

NAME	ENABLED	IP ADDRESS	NETMASK	GATEWAY	PERSISTENCE	ACTIONS
lan	☒	192.168.1.253	255.255.255.0		Enabled	

Add network

Rename the network as **PUBLIC** and fill in the required fields. Then go to the **Interfaces Settings** tab

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the names of several network interfaces.

COMMON CONFIGURATION

General Setup | Interfaces Settings | Advanced Settings

Enable interface ☒

Network description PUBLIC
Friendly name for your network

Protocol static

IPv4-Address 192.168.1.10

IPv4-Netmask 255.255.255.0

IPv4-Gateway

DNS-Server

You can specify multiple DNS servers here, press enter to add a new entry. Servers entered here will override automatically assigned ones.

IP-ALIASES

This section contains no values yet

Add

Reset Save Save & Apply

Uncheck the **Ethernet adapter** checkbox, then **Save**

PHYSICAL INTERFACES

VIRTUAL INTERFACES

NETWORK

LAN

VPN

BRIDGING

ROUTING / FIREWALL

QOS

SERVICES

SETUP

TOOLS

STATUS

NETWORK - LAN

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the names of several network interfaces.

COMMON CONFIGURATION

General Setup

Interfaces Settings

Advanced Settings

Bridge interfaces

Enable STP/RSTP

Enable LLDP forwarding

bridge VLAN

Interface

MTU

☒ creates a bridge over specified interface(s)

☐ Enables the Spanning Tree Protocol on this bridge
WARNING: Some cautions must be taken with wireless interfaces, please see user guide

☐ Enables the LLDP frame forwarding.

☐ Enable VLAN management in bridge. You must configure the bridge VLANs before enabling this option (setup->bridging)

☐ Ethernet adapter: LAN (lan)

☒ WiFi adapter: WiFi - NAT-CLIENT (lan)

1500

IP-ALIASES

This section contains no values yet

Add

Reset

Save

Save & Apply

3

Click **NETWORK** on the left to return to **NETWORK OVERVIEW**. Click on **Add Network**

PHYSICAL INTERFACES

VIRTUAL INTERFACES

NETWORK

PUBLIC

VPN

BRIDGING

ROUTING / FIREWALL

QOS

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NETWORK OVERVIEW

NAME	ENABLED	IP ADDRESS	NETMASK	GATEWAY	PERSISTENCE	ACTIONS
PUBLIC	☒	192.168.1.10	255.255.255.0		Enabled	

Add network

Name the network **PRIVATE** and fill in the required fields, then switch to the **Interfaces Settings** tab

PHYSICAL INTERFACES

VIRTUAL INTERFACES

NETWORK

PUBLIC
NET1

VPN

BRIDGING

ROUTING / FIREWALL

QOS

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NETWORK - NET1

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the names of several network interfaces.

COMMON CONFIGURATION

General Setup

Interfaces Settings

Advanced Settings

Enable interface

☒

Network description

PRIVATE

Friendly name for your network

Protocol

static

IPv4-Address

192.168.100.100

IPv4-Netmask

255.255.255.0

IPv4-Gateway

DNS-Server

You can specify multiple DNS servers here, press enter to add a new entry. Servers entered here will override automatically assigned ones.

IP-ALIASES

This section contains no values yet

Add

Reset

Save

Save & Apply

4

Uncheck the **Bridge interfaces** box and select **Ethernet adapter LAN**

PHYSICAL INTERFACES

VIRTUAL INTERFACES

NETWORK

PUBLIC
NET1

VPN

BRIDGING

ROUTING / FIREWALL

QOS

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NETWORK - NET1

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the names of several network interfaces.

COMMON CONFIGURATION

General Setup

Interfaces Settings

Advanced Settings

Bridge interfaces

☐

creates a bridge over specified interface(s)

Interface

☒ Ethernet adapter: LAN
 ☐ WiFi adapter: WiFi - acksys (PUBLIC)

MTU

1500

IP-ALIASES

This section contains no values yet

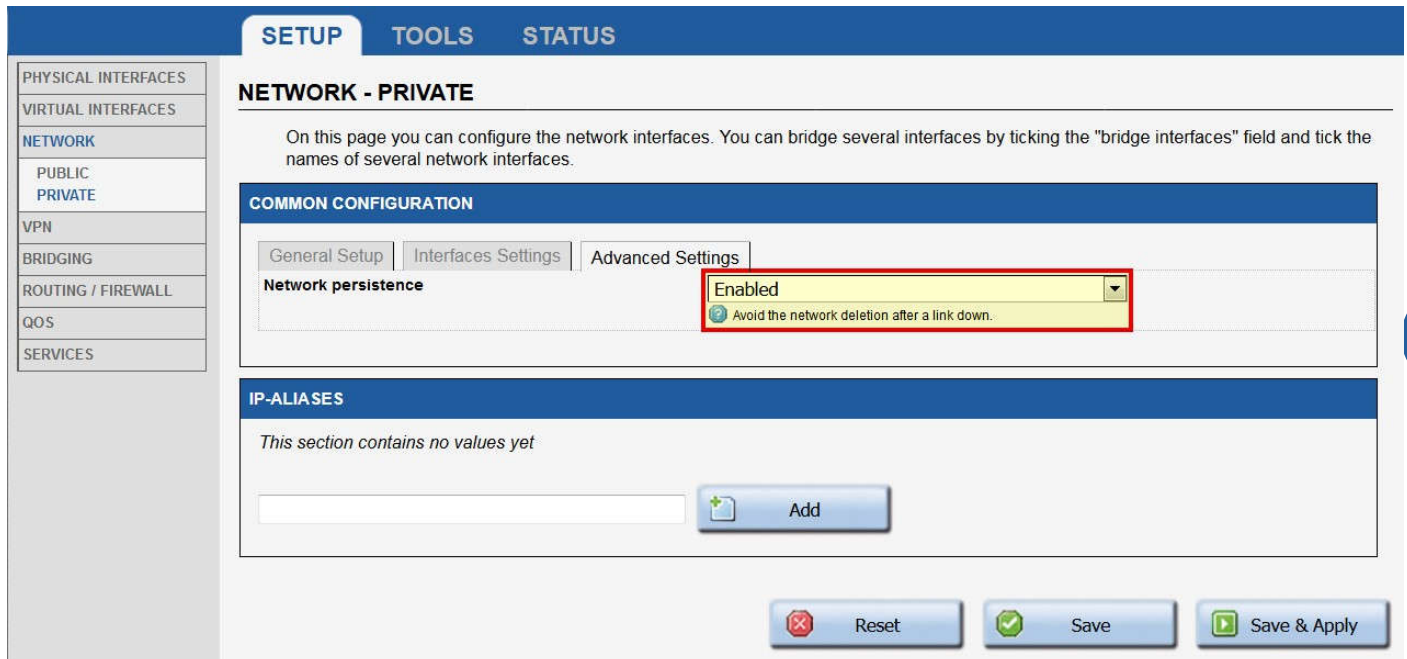
Add

Reset

Save

Save & Apply

In the **Advanced settings** tab, check that the network persistence is **Enabled** then **Save**



SETUP **TOOLS** **STATUS**

NETWORK - PRIVATE

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the names of several network interfaces.

COMMON CONFIGURATION

General Setup | Interfaces Settings | **Advanced Settings**

Network persistence Enabled
Avoid the network deletion after a link down.

IP-ALIASES

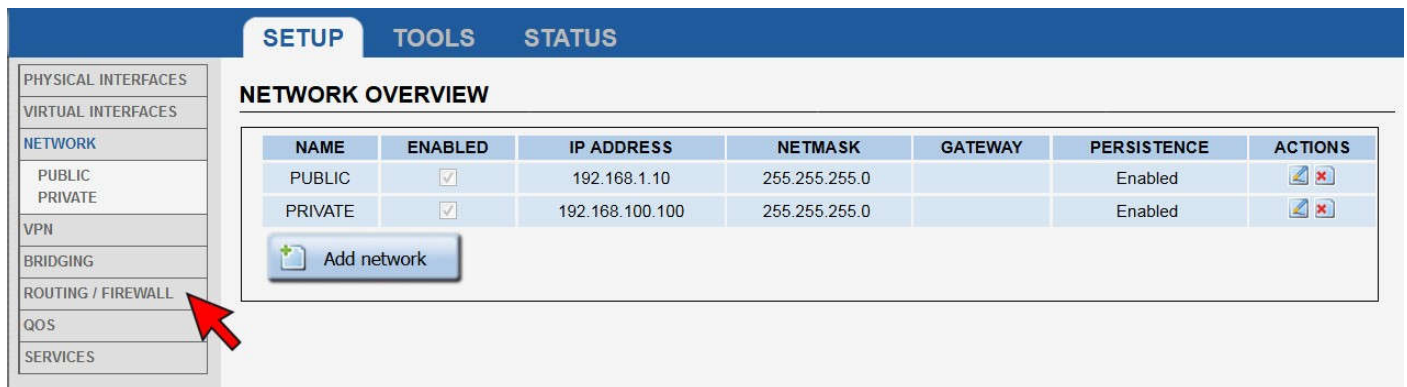
This section contains no values yet

 Add

 Reset  Save  Save & Apply

5

Click on **Routing/Firewall**



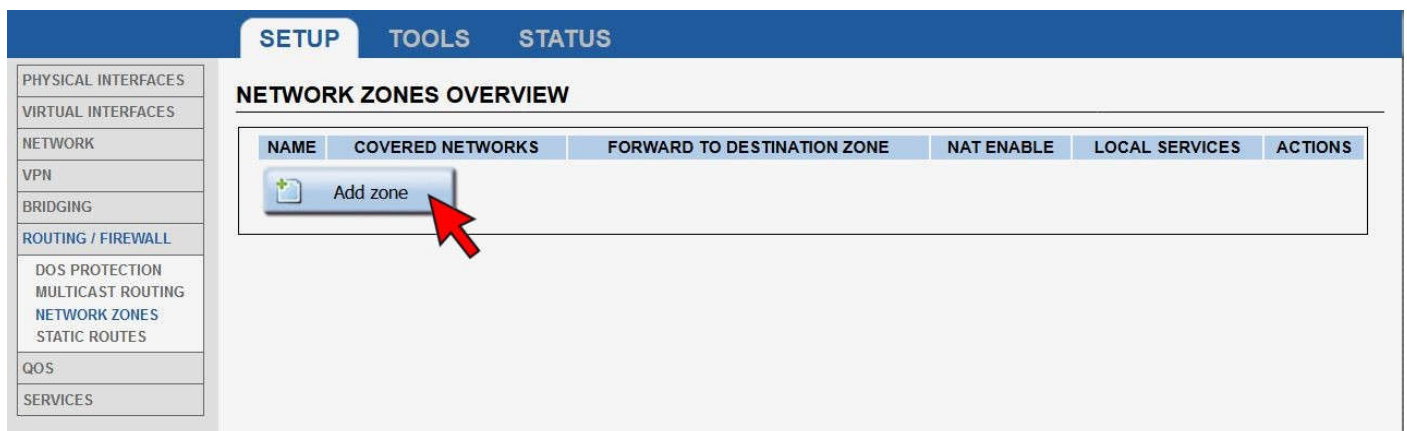
SETUP **TOOLS** **STATUS**

NETWORK OVERVIEW

NAME	ENABLED	IP ADDRESS	NETMASK	GATEWAY	PERSISTENCE	ACTIONS
PUBLIC	☒	192.168.1.10	255.255.255.0		Enabled	 
PRIVATE	☒	192.168.100.100	255.255.255.0		Enabled	 

 Add network

Click on **NETWORK ZONES** then **Add zone**



SETUP **TOOLS** **STATUS**

NETWORK ZONES OVERVIEW

NAME	COVERED NETWORKS	FORWARD TO DESTINATION ZONE	NAT ENABLE	LOCAL SERVICES	ACTIONS
 Add zone					

Name the zone **PRIVATE** then select **PRIVATE network**

PHYSICAL INTERFACES

VIRTUAL INTERFACES

NETWORK

VPN

BRIDGING

ROUTING / FIREWALL

DOS PROTECTION

MULTICAST ROUTING

NETWORK ZONES

STATIC ROUTES

QOS

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NETWORK ZONES - ZONE SETTINGS

ZONE "ZONE_1"

This section defines common properties of "zone_1".
Covered networks specifies which available networks are members of this zone.

General Settings

Advanced Settings

Name

PRIVATE

Enable NAT

☐ Only on public zones. Warning: if using VRRP, the NATed network must be set to protocol NONE

MSS clamping

☐

Default acceptance policy for local services

All enabled

You can restrict or open the local services in the firewall section below

Covered networks

☐ PUBLIC:

☒ PRIVATE:

INTER-ZONE FORWARDING

Use this section only if NAT is disabled on this zone.
The options below control the forwarding policies between this zone (zone_1) and other zones. *Destination zones* cover forwarded traffic **originating from "zone_1"**. The forwarding rule is *unidirectional*, e.g. a forward from lan to wan does *not* imply a permission to forward from wan to lan as well.

Allow forwarding to *destination zones*:

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Save and add a new zone from **NETWORK ZONE**

PHYSICAL INTERFACES

VIRTUAL INTERFACES

NETWORK

VPN

BRIDGING

ROUTING / FIREWALL

DOS PROTECTION

MULTICAST ROUTING

NETWORK ZONES

STATIC ROUTES

QOS

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NETWORK ZONES OVERVIEW

NAME	COVERED NETWORKS	FORWARD TO DESTINATION ZONE	NAT ENABLE	LOCAL SERVICES	ACTIONS
PRIVATE	"PRIVATE"	-	☐	All enabled	

Add zone

Name the new area **PUBLIC**, check **NAT** and select the **PUBLIC** network, then **Add** in **TRAFFIC FORWARD**.

PHYSICAL INTERFACES

VIRTUAL INTERFACES

NETWORK

VPN

BRIDGING

ROUTING / FIREWALL

DOS PROTECTION

MULTICAST ROUTING

NETWORK ZONES

STATIC ROUTES

QOS

SERVICES

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ZONE "ZONE_2"

This section defines common properties of "zone_2".

Covered networks specifies which available networks are members of this zone.

General Settings

Advanced Settings

Name

PUBLIC

Enable NAT

☒

Only on public zones. Warning: if using VRRP, the NATed network must be set to protocol NONE

MSS clamping

☐

Default acceptance policy for local services

All enabled

You can restrict or open the local services in the firewall section below

Covered networks

☒ PUBLIC

☐ PRIVATE

INTER-ZONE FORWARDING

Use this section only if NAT is disabled on this zone.

The options below control the forwarding policies between this zone (zone_2) and other zones. Destination zones cover forwarded traffic originating from "zone_2". The forwarding rule is unidirectional, e.g. a forward from lan to wan does not imply a permission to forward from wan to lan as well.

Allow forwarding to destination zones:

☐ PRIVATE

☐ PRIVATE

TRAFFIC FORWARD

Use this section only if NAT is enabled on this zone

This section allow to redirect the input traffic on this zone to a device on other zone

SOURCE ZONE	NAME	SOURCE IP	FRAME PROTOCOL	PUBLIC PORT	PRIVATE PORT	DESTINATION IP	SORT
		Blank any ip source		Blank, all ports	Blank, all ports		

This section contains no values yet

Add

Fill in the required fields for the first translation rule, then add the second rule

TRAFFIC FORWARD

Use this section only if NAT is enabled on this zone

This section allow to redirect the input traffic on this zone to a device on other zone

SOURCE ZONE	NAME	SOURCE IP	FRAME PROTOCOL	PUBLIC PORT	PRIVATE PORT	DESTINATION IP	SORT
		Blank any ip source		Blank, all ports	Blank, all ports		
Public	PLC_IO	any	udp	4200	4200	192.168.100.101	

Add

TRAFFIC FORWARD

Use this section only if NAT is enabled on this zone

This section allow to redirect the input traffic on this zone to a device on other zone

SOURCE ZONE	NAME	SOURCE IP	FRAME PROTOCOL	PUBLIC PORT	PRIVATE PORT	DESTINATION IP	SORT
		Blank any ip source		Blank, all ports	Blank, all ports		
Public	PLC_IO	any	udp	4200	4200	192.168.100.101	
Public	PLC_MASTER	any	tcp	8080	80	192.168.100.101	

Add

Save and return to **NETWORK ZONE** to edit the **PRIVATE** area

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DOS PROTECTION

MULTICAST ROUTING

NETWORK ZONES

STATIC ROUTES

QOS

SERVICES

NETWORK ZONES OVERVIEW

NAME	COVERED NETWORKS	FORWARD TO DESTINATION ZONE	NAT ENABLE	LOCAL SERVICES	ACTIONS
PRIVATE	"PRIVATE"	-	☐	All enabled	 
PUBLIC	"PUBLIC"	-	☒	All enabled	 

 Add zone

In **INTER-ZONE FORWARDING**, allow routing to the **PUBLIC** area, then **Save**

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BRIDGING

ROUTING / FIREWALL

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NETWORK ZONES

STATIC ROUTES

QOS

SERVICES

NETWORK ZONES - ZONE SETTINGS

ZONE "PRIVATE"

This section defines common properties of "PRIVATE".
Covered networks specifies which available networks are members of this zone.

General Settings

Advanced Settings

Name

PRIVATE

Enable NAT

☐ Only on public zones. Warning: if using VRRP, the NATed network must be set to protocol NONE

MSS clamping

☐

Default acceptance policy for local services

All enabled

You can restrict or open the local services in the firewall section below

Covered networks

☐ PUBLIC: 
☒ PRIVATE: 

INTER-ZONE FORWARDING

Use this section only if NAT is disabled on this zone.
The options below control the forwarding policies between this zone (PRIVATE) and other zones. Destination zones cover forwarded traffic originating from "PRIVATE". The forwarding rule is *unidirectional*, e.g. a forward from lan to wan does *not* imply a permission to forward from wan to lan as well.

Allow forwarding to destination zones:

☒ PUBLIC 
☐ PUBLIC: 

You will now be able to reboot to activate the new configuration. In **TOOLS/SAVE CONFIG**, click **REBOOT**. At this point, make sure your PC is configured on the **PRIVATE** network subnet of the product (192.168.100.0/24) to return to the administration.

SETUP

TOOLS

STATUS

FIRMWARE UPGRADE

PASSWORD SETTINGS

SYSTEM

NETWORK

SAVE CONFIG / RESET

LOG SETTINGS

CONFIGURATION MANAGEMENT

SAVE AND RESTORE CONFIGURATION

Configuration file

Parcourir...

Aucun fichier sélectionné.

Restore configuration from file

Restore

Backup settings to file

Backup

RESET AND REBOOT

Reset to factory settings

Reset

Reboot your device

Reboot

After reboot, you can check that the physical interfaces are functional in the **STATUS/NETWORK** page

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SETUP

TOOLS

STATUS

DEVICE INFO

NETWORK

WIRELESS

SERVICES

LOGS

INTERFACES

PRIVATE

IP CONFIGURATION

IPv4: 192.168.100.100 Netmask: 24 MTU: 1500

DNS server: 0.0.0.1

GRAPH	PHYSICAL INTERFACE	MAC ADDRESS	TX COUNT (IN BYTES)	RX COUNT (IN BYTES)	INTERFACE MODE	MTU
	LAN	00:09:90:00:90:d4	2256162	4792868	Negotiated 1000 baseTX FD, link ok	1500

PUBLIC

IP CONFIGURATION

IPv4: 192.168.1.10 Netmask: 24 MTU: 1500

DNS server: 0.0.0.1

GRAPH	PHYSICAL INTERFACE	MAC ADDRESS	TX COUNT (IN BYTES)	RX COUNT (IN BYTES)	INTERFACE MODE	MTU
	WiFi	c4:93:00:08:a0:76	153832	156724	Role: Client (infrastructure) SSID: NAT-CLIENT Channel: 48	1500

If the access point is within range, you can check in **STATUS/WIRELESS/ASSOC STATIONS** that the product is correctly associated

SETUP

TOOLS

STATUS

DEVICE INFO

NETWORK

WIRELESS

ASSOC STATIONS

CHANNEL STATUS

MESH SURVEY

SERVICES STATUS

SITE SURVEY

SRCC STATUS

SERVICES

LOGS

ASSOCIATED STATIONS

ASSOCIATED STATIONS RESULTS : 1

GRAPH	RADIO	NAME / SSID	MODE	MAC	CHANNEL	SIGNAL	NOISE	SIGNAL/NOISE
	WiFi	NAT-CLIENT	Infrastructure	00:80:48:7A:80:63	48	-45 dBm	-91 dBm	46 dB

Reset