

# APPLICATION NOTE

## APNUS013 NAT Configuration example For WaveOS

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### **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):

	SETUP	TOOLS	STATUS				
PHYSICAL INTERFACES	NETWORK						
/IRTUAL INTERFACES	NEIWORK	OVERVIEW					
IETWORK	NAME	ENABLED	IP ADDRESS	NETMASK	GATEWAY	PERSISTENCE	ACTIONS
LAN	lan	<b>V</b>	192.168.1.253	255.255.255.0		Enabled	
/PN	(*)						
RIDGING	Add	network					
OUTING / FIREWALL							
IOS							
SERVICES							

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

	SETUP TOOLS STATUS	ş
PHYSICAL INTERFACES		
VIRTUAL INTERFACES	NETWORK - LAN	
NETWORK	On this page you can configure the netwo	ork interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the
LAN	names of several network interfaces.	
VPN	COMMON CONFIGURATION	
BRIDGING	Developing Interference Cettingen	hopped Cattings
ROUTING / FIREWALL	General Setup   Interfaces Setungs   Ad	wanced settings
QOS		
SERVICES	Network description	PUBLIC  PUBLIC PUBLIC  PUBLIC PUBLIC PUBLIC PUBLIC PUBLIC PUBLIC PUBLI
	Protocol	static
	IPv4-Address	192.168.1.10
	IPv4-Netmask	255.255.255.0
	IPv4-Gateway	
	<u>DNS</u> -Server	2 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

	SETUP TOOLS STATUS	
PHYSICAL INTERFACES	NETWORK LAN	
VIRTUAL INTERFACES	NETWORK - LAN	
NETWORK	On this page you can configure the network interface	ces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the
LAN	names of several network interfaces.	
VPN	COMMON CONFIGURATION	
BRIDGING		
ROUTING / FIREWALL	General Setup Interfaces Settings Advanced S	ietings
QOS	Bridge interfaces	Image: Contract of the second seco
SERVICES	Enable <u>STP/RSTP</u>	Image: Pables the Spanning Tree Protocol on this bridge WARNING: Some cautions must be taken with wireless interfaces, please see user guide
	Enable LLDP forwarding	Enables the LLDP frame forwarding.
	bridge VLAN	I enable VLAN management in bridge. You must configure the bridge VLANs before enabling this option (setup->bridging)
	Interface	Ethernet adapter: LAN (lan) Ø WiFi adapter: WiFi - NAT-CLIENT (lan)
	мτυ	1500
	IP-ALIASES	
	This section contains no values yet	
		Add
		🔞 Reset 🔇 Save 🚺 Save & Apply

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

	SETUP	TOOLS	STATUS				
PHYSICAL INTERFACES	NETWORK						
/IRTUAL INTERFACES	NETWORK	JVERVIEW					
IETWORK	NAME	ENABLED	IP ADDRESS	NETMASK	GATEWAY	PERSISTENCE	ACTIONS
PUBLIC	PUBLIC		192.168.1.10	255.255.255.0		Enabled	2
/PN 3RIDGING ROUTING / FIREWALL QOS SERVICES	Add n	etwork					



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

	SETUP TOOLS STATUS	
PHYSICAL INTERFACES	NETWORK NET	
VIRTUAL INTERFACES	NETWORK - NETT	
NETWORK	On this page you can configure the network in	nterfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the
PUBLIC NET1		
VPN		
BRIDGING	General Setup Interfaces Settings Advan	iced Settings
ROUTING / FIREWALL	Enable interface	
QOS	Network description	PRIVATE
SERVICES		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

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

PHYSICAL INTERFACES	SETOP TOOLS STATUS	
VIRTUAL INTERFACES	NETWORK - NET1	
NETWORK	On this page you can configure the network inte	erfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the
PUBLIC	names of several network interfaces.	
NET1	COMMON CONFIGURATION	
PN		
RIDGING	General Setup Interfaces Settings Advance	ed Settings
OUTING / FIREWALL	Bridge interfaces	2 creates a bridge over specified interface(s)
OS	Interface	🔘 🖉 Ethernet adapter: LAN
ERVICES		🔘 🧑 WiFi adapter: WiFi - acksys (PUBLIC)
	мто	1500
	IP-ALIASES	
	This section contains no values yet	
		Add Add
		Save & Apply



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

	SETUP TOOLS STATUS
PHYSICAL INTERFACES	
VIRTUAL INTERFACES	NEIWORK - PRIVATE
NETWORK	On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and tick the
PUBLIC	names of several network interfaces.
PRIVATE	COMMON CONFIGURATION
VPN	
BRIDGING	General Setup Interfaces Settings Advanced Settings
ROUTING / FIREWALL	Network persistence Enabled
QOS	Avoid the network deletion after a link down.
SERVICES	
ļ]	IP-ALIASES
	This section contains no values yet
	Add
	🔞 Reset 🙆 Save & Apply

#### Click on Routing/Firewall

	SETUP	TOOLS	STATUS				
PHYSICAL INTERFACES							
IRTUAL INTERFACES	NEIWORKC	VERVIEW					
ETWORK	NAME	ENABLED	IP ADDRESS	NETMASK	GATEWAY	PERSISTENCE	ACTIONS
PUBLIC	PUBLIC		192.168.1.10	255.255.255.0		Enabled	2 🕺
PRIVATE	PRIVATE	<b>V</b>	192.168.100.100	255.255.255.0		Enabled	2 🗙
7PN 3RIDGING ROUTING / FIREWALL 205 SERVICES	Add ne	twork					

#### Click on NETWORK ZONES then Add zone

	SETUP	TOOLS STA	TUS			
PHYSICAL INTERFACES	NETWORK					
VIRTUAL INTERFACES	NETWORK	CONES OVERVIEW				
NETWORK	NAME	COVERED NETWORKS	FORWARD TO DESTINATION ZONE	NAT ENABLE	LOCAL SERVICES	ACTIONS
VPN	*	1				
BRIDGING		ad zone				
ROUTING / FIREWALL		— <b>K</b>				
DOS PROTECTION		•				
NETWORK ZONES						
STATIC ROUTES						
QOS						
SERVICES						



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

PHYSICAL INTERFACES	NETWORK ZONES - ZONE SETTINGS	
VIRTUAL INTERFACES		
NETWORK	ZONE "ZONE_1"	
VPN	This section defines common properties of "zone_1".	
BRIDGING	Covered networks specifies which available networks	s are members of this zone.
ROUTING / FIREWALL	General Settings Advanced Settings	
DOS PROTECTION	Name	PRIVATE
NETWORK ZONES	Enable NAT	🔲 😰 Only on public zones. Warning: if using VRRP, the NATed network must be set to protocol NONE
STATIC ROUTES	MSS clamping	
QOS	Default acceptance policy for local services	All enabled
SERVICES		You can restrict or open the local services in the firewall section below
	Covered networks	PUBLIC: (1)       PRIVATE: (2)
	INTER-ZONE FORWARDING Use this section only if NAT is disabled on this zo The options below control the forwarding policies bet from "zone_1". The forwarding rule is unidirectional	one. ween this zone (zone_1) and other zones. <i>Destination zones</i> cover forwarded traffic <b>originating</b> , e.g. a forward from lan to wan does <i>not</i> imply a permission to forward from wan to lan as well.

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

	SETUP	TOOLS STATE	JS			
PHYSICAL INTERFACES	NETWORK	ZONES OVERVIEW				
VIRTUAL INTERFACES	NETWORK	ZONES OVERVIEW				
NETWORK	NAME	COVERED NETWORKS	FORWARD TO DESTINATION ZONE	NAT ENABLE	LOCAL SERVICES	ACTIONS
VPN	PRIVATE	"PRIVATE"			All enabled	2
BRIDGING	(*)					
ROUTING / FIREWALL	Ad	id zone				
DOS PROTECTION		— K				
MULTICAST ROUTING						
STATIC ROUTES						
QOS						



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

ORK ZONES ZONE_2" exction defines con ed networks speci eral Settings // / e NAT elamping It acceptance pol red networks	Advanced Settings	s are members of this zon PUBLIC  PUBLIC  All enabled  You can restrict or  PUE PUE PUE PUE PUE PUE PUE	ne. lic zones. Warning: if usir r open the local services BLIC:	ig VRRP, the NATed netw in the firewall section bet	ork must be set to protocol	NONE
ZONE_2" exction defines con ed networks speci eral Settings // / e NAT elamping It acceptance pol red networks	nmon properties of "zone_2". files which available networks Advanced Settings	s are members of this zon PUBLIC  PUBLIC  All enabled  You can restrict on  PUE  PUE  PUE  PUE  PUE  PUE  PUE  PU	ne. Ilic zones. Warning: if usir r open the local services BLIC:	Ig VRRP, the NATed netw	ork must be set to protocol	NONE
ection defines con ed networks speci eral Settings A e NAT lamping It acceptance pol red networks	nmon properties of "zone_2" fies which available networks Advanced Settings	s are members of this zon PUBLIC  PUBLIC  All enabled  You can restrict on  PUE PUE PUE PUE PUE PUE PUE PUE PUE PU	ne. lic zones. Warning: if usin r open the local services BLIC:	Ig VRRP, the NATed netw	ork must be set to protocol	NONE
ed networks speci eral Settings / / e NAT lamping It acceptance pol red networks	fies which available networks	s are members of this zon PUBLIC  PUBLIC  All enabled  You can restrict or  PUE PUE PUE PUE PUE PUE PUE PUE PUE PU	IIIC zones. Warning: if usin r open the local services BLIC:	ig VRRP, the NATed netw	ork must be set to protocol	NONE
eral Settings / / e NAT lamping It acceptance pol red networks	Advanced Settings	PUBLIC PUB	lic zones. Warning: if usin r open the local services BLIC:	ig VRRP, the NATed netw	ork must be set to protocol	NONE
e NAT Jamping It acceptance pol	licy for local services	PUBLIC C Only on public All enabled C You can restrict or Vou can restrict or PUE	lic zones. Warning: if usin r open the local services BLIC:	Ig VRRP, the NATed netw	ork must be set to protocol	NONE
e NAT Ilamping It acceptance pol red networks	licy for local services	Only on puble     Only on puble     All enabled     Or you can restrict on     Vou can restrict on     Or Pue     Pue     Pue	lic zones. Warning: if usin r open the local services BLIC: @ IVATE: E	IG VRRP, the NATed netw	ork must be set to protocol	NONE
lamping It acceptance pol red networks	licy for local services	All enabled	r open the local services BLIC:	•	low	
it acceptance pol	licy for local services	All enabled You can restrict or PUE	r open the local services BLIC:	▼	low	
ed networks		You can restrict or      You can restrict or      PUE     PUE     PUE     PUE     PUE	r open the local services BLIC: @	in the firewall section bel	low	
ed networks			BLIC: 💇			
IS SECTION ONLY IN IS SECTION ONLY IN Itions below contr ZONE_2". The for forwarding to des	DING f NAT is disabled on this zo ol the forwarding policies bet warding rule is unidirectional, stination zones:	one. tween this zone (zone_2) I, e.g. a forward from lan t	and other zones. <i>De</i> to wan does <i>not</i> impl RIVATE: J	estination zones cov y a permission to fo	ver forwarded traffic <b>o</b> rward from wan to lar	riginatin 1 as well.
C FORWARD is section only in ection allow to red	f NAT is enabled on this zo	ne zone to a device on other	zone			
URCE ZONE NA	ME 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			
UF	RCE ZONE NA	RCE ZONE NAME SOURCE IP Blank any ip source	RCE ZONE         NAME         SOURCE IP         FRAME PROTOCOL           Blank any ip source         This section contains	RCE ZONE         NAME         SOURCE IP         FRAME PROTOCOL         PUBLIC PORT           Blank any ip source         Blank, all ports         Blank, all ports	RCE ZONE         NAME         SOURCE IP         FRAME PROTOCOL         PUBLIC PORT         PRIVATE PORT           Blank any ip source         Blank, all ports         Blank, all ports         Blank, all ports	RCE ZONE       NAME       SOURCE IP       FRAME PROTOCOL       PUBLIC PORT       PRIVATE PORT       DESTINATION IP         Blank any ip source       Blank, all ports       Blank, all ports       Blank, all ports         Add       Add       Source       Source       Source       Source

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

TRAFFIC FORWA	RD							
Use this sectio This section all	n only if NAT is enabled ow to redirect the input f	l <b>on this zone</b> traffic on this zone to a device o	n 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	÷ +	*
<u>+</u>	dd Nad							

Use this section only This section allow to	Iy if NAT is enabled o redirect the input tr	on this zone raffic on this zone to a device or	n 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	C_10	any	udp 💌	4200	4200	192.168.100.101	÷ +	×
Public PLC	MASTER	any	tcp 💌	8080	80	192.168.100.101	÷ +	×

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



	SETUP	TOOLS STA	TUS			
PHYSICAL INTERFACES	NETWORK		r			
VIRTUAL INTERFACES	NETWORK	ZONES OVERVIEW			TE.	
NETWORK	NAME	COVERED NETWORKS	FORWARD TO DESTINATION ZONE	NAT ENABLE	LOCAL SERVICES	ACTIONS
VPN	PRIVATE	"PRIVATE"	-		All enabled	4.8
BRIDGING	PUBLIC "PUBLIC"		-	$\overline{\mathbf{v}}$	All enabled	
ROUTING / FIREWALL DOS PROTECTION MULTICAST ROUTING NETWORK ZONES STATIC ROUTES	Ad	d zone				
SERVICES						

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

PHYSICAL INTERFACES	NETWORK ZONES - ZONE SETTIN	GS
VIRTUAL INTERFACES		
NETWORK	ZONE "PRIVATE"	
VPN	This section defines common properties of "PR	VATE".
BRIDGING	Covered networks specifies which available net	works are members of this zone.
ROUTING / FIREWALL	General Settings Advanced Settings	
DOS PROTECTION MULTICAST ROUTING NETWORK ZONES	Name	PRIVATE
	Enable NAT	🔲 🍘 Only on public zones. Warning: if using VRRP, the NATed network must be set to protocol NONE
STATIC ROUTES	MSS clamping	
05	Default acceptance policy for local services	All enabled
SERVICES		You can restrict or open the local services in the firewall section below
	Covered networks	PUBLIC:
	INTER-ZONE FORWARDING	
	Use this section only if NAT is disabled on the The options below control the forwarding policie originating from "PRIVATE". The forwarding re lan as well.	is zone. s between this zone (PRIVATE) and other zones. Destination zones cover forwarded traffic ule is unidirectional, e.g. a forward from lan to wan does not imply a permission to forward from wan

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		
IRMWARE UPGRADE	CONFIGURATION MANAGEMENT		
ASSWORD SETTINGS	CONFIGURATION MANAGEMENT		
SYSTEM	SAVE AND RESTORE CONFIGURATION		
NETWORK	Configuration file	Dercouvir Augus fishier célectionsé	
SAVE CONFIG / RESET			
LOG SETTINGS	Restore configuration from file	Restore	
]	Backup settings to file	Backup	
	RESET AND REBOOT		
	Reset to factory settings	Reset	
	Reboot your device	Pohoot	

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





EVICE INFO	INTEREA	CES					
etwork		CE3					
/IRELESS	PRIVATE						
ERVICES			IP (	ONFIGURATION			
LOGS			IPv4: 192.168.10	0.100 Netmask: 24 M	TU: 1500		
			DN	S server: 0.0.0.1			
	GRAPH	PHYSICAL INTERFACE	MAC ADDRESS	TX COUNT (IN BYTES)	RX COUNT (IN BYTES)	INTERFACE MODE	мт
	PUBLIC	LAN	00:09:90:00:90:d4	2256162	4792868	Negotiated 1000 baseTX FD, link ok	150
	PUBLIC	LAN	00:09:90:00:90:d4	2256162	4792868	Negotiated 1000 baseTX FD, link ok	150
	PUBLIC	LAN	00:09:90:00:90:d4 IP ( IPv4: 192.168.	2256162 CONFIGURATION 1.10 Netmask: 24 MT	4792868 U: <b>1500</b>	Negotiated 1000 baseTX FD, link ok	150
	PUBLIC	LAN	00:09:90:00:90:d4 IP ( IPv4: 192.168. DN	2256162 CONFIGURATION 1.10 Netmask: 24 MT S server: 0.0.0.1	4792868 U: 1500	Negotiated 1000 baseTX FD, link ok	150
	PUBLIC	LAN	00:09:90:00:90:d4 IP ( IPv4: 192.168. DN MAC ADDRESS	2256162 CONFIGURATION 1.10 Netmask: 24 MT S server: 0.0.0.1 TX COUNT (IN BYTES)	4792868 U: 1500 RX COUNT (IN BYTES)	Negotiated 1000 baseTX FD, link ok	150 MT

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	ASSOCIA								
NETWORK	ASSOCIA	TED STATIONS	3						
WIRELESS	ASSOCIATE	D STATIONS RESU	LTS : 1						
ASSOC STATIONS CHANNEL STATUS MESH SURVEY	GRAPH	RADIO	NAME / SSID	e MODE - ▼e	MAC Ə		SIGNAL		SIGNAL/NOISE
SERVICES STATUS SITE SURVEY SRCC STATUS	âĥ	WiFi	NAT-CLIENT	Infrastructure	00:80:48:7A:80:63	48	-45 dBm	-91 dBm	46 dB
ERVICES									
OGS		Reset							