

ACKSYS LTE 설정 매뉴얼

(Firmware version 4.22.3.1 이후)

[적용 제품]

AirBox 17

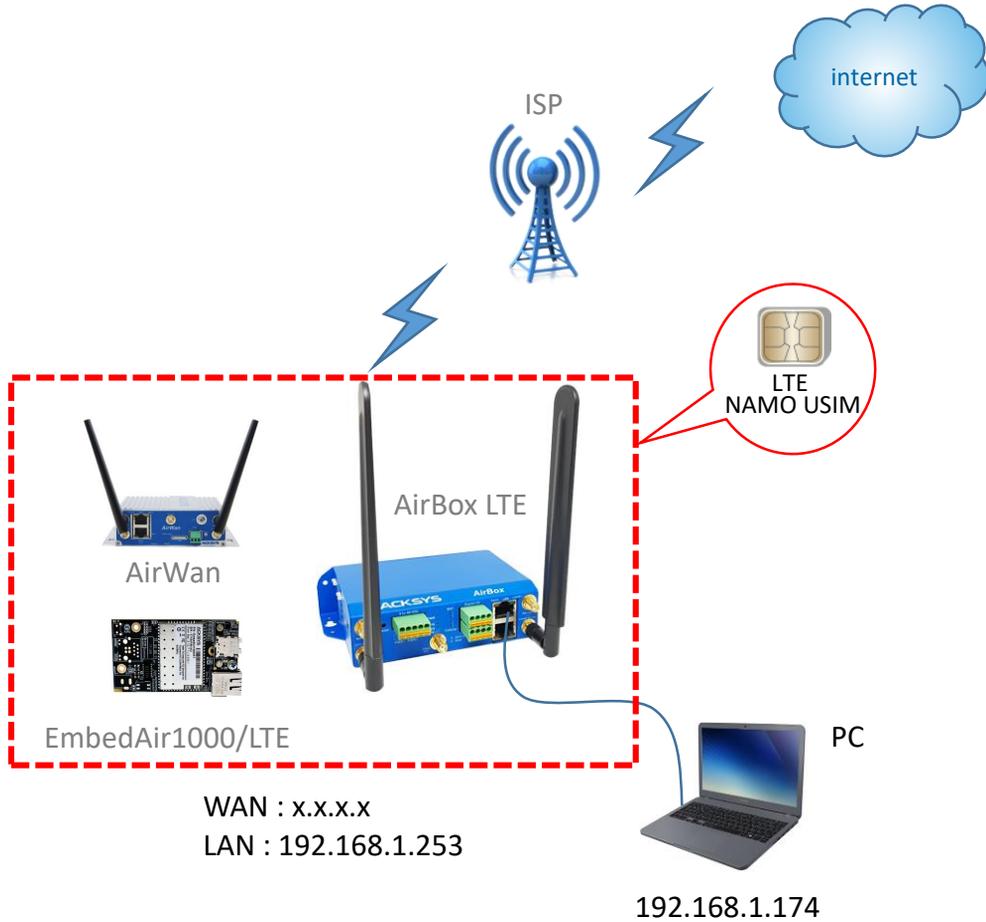


AirWan



EmbedAir1000/LTE





LTE USIM이 탑재된 AirBox LTE 제품을 통해 PC가 인터넷에 연결되는 예시입니다. 가입한 LTE 상품에 따라 고정공인 IP 또는 사설유동 IP를 부여받을 수 있으며, 이에 따라 AirBox LTE 제품은 서버 또는 클라이언트로 동작되어 거리에 제한 없이 LTE망을 통해 네트워크망을 구축하실 수 있습니다.

윈도우 PC에서는 기본적으로 방화벽에 의해 ping 응답이 비활성화 되어 있으므로 들어오는 ping 트래픽을 허용하는 규칙을 추가하세요.

가입된 LTE USIM을 AirBox LTE SIM 슬롯1에 장착하고, 랜케이블을 AirBox LTE 의 LAN1과 PC의 랜포트에 연결합니다. LTE 안테나를 연결한 후 전원을 인가하여 설정을 시작합니다.

AirWan, EmbedAir1000/LTE 제품도 유심과 셀룰러 안테나를 장착해서 설정을 시작합니다.

전원 ON 후에는 안테나를 만지지 마세요. 정전기 등으로 인하여 제품이 손상될 수 있습니다.

AirBox17/LTE 예 :



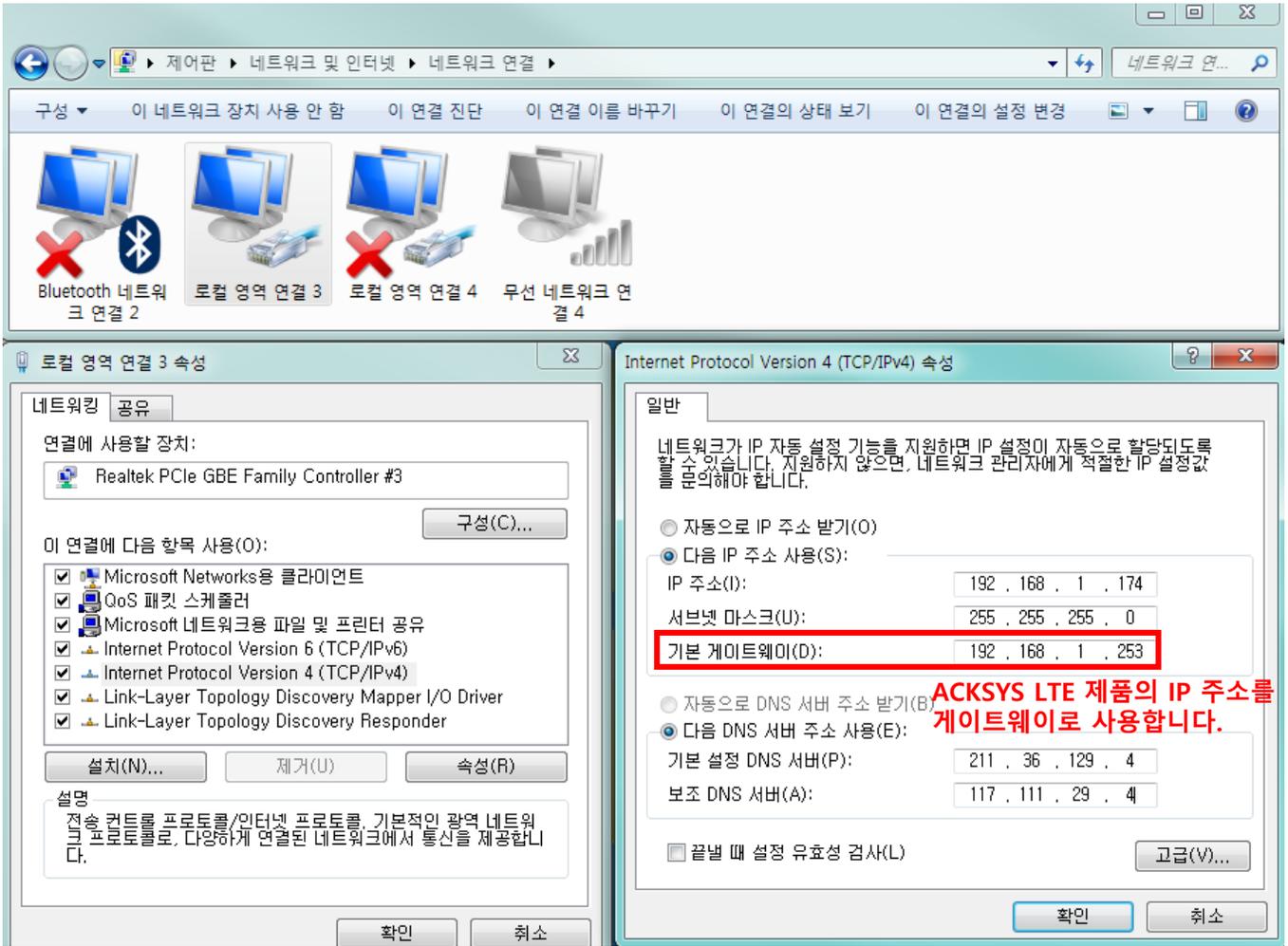
슬롯1 장착



LAN1 랜케이블 연결



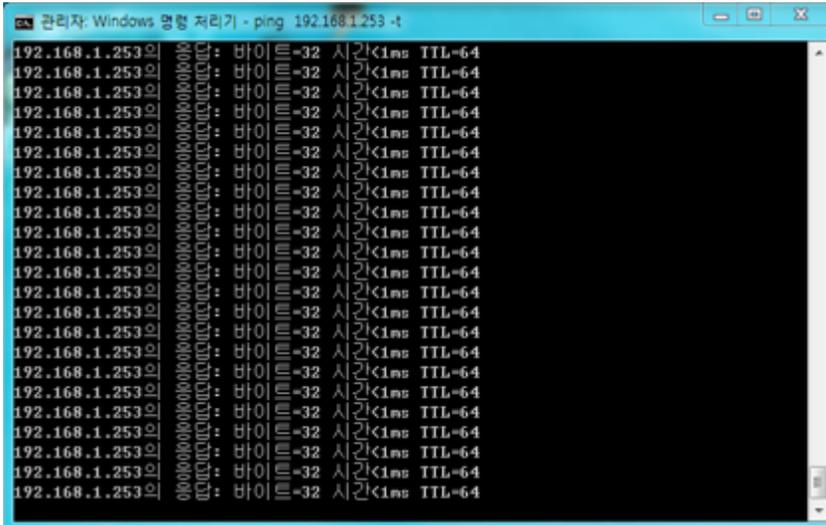
LTE 안테나 연결



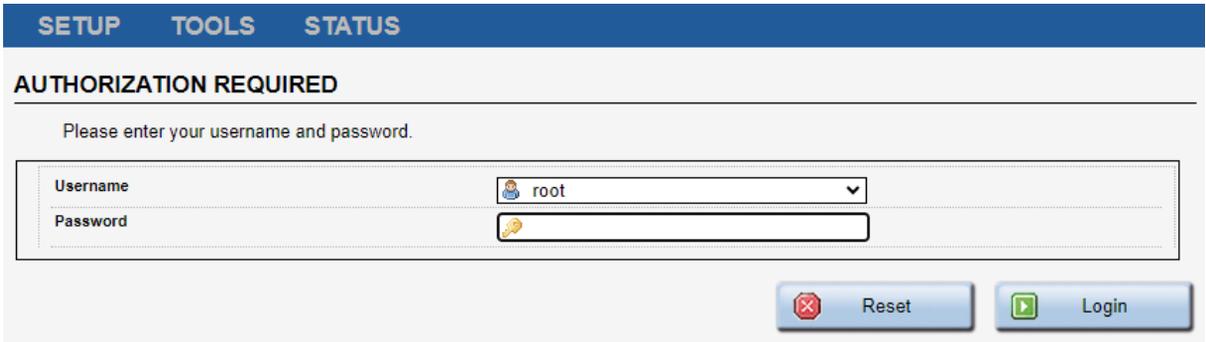
1. ACKSYS LTE 제품의 원활한 설정을 위해 PC의 무선기능 OFF 후 로컬 영역 IP를 위와 같이 192.168.x.x 대역으로 설정합니다.
2. DNS 설정은 다음과 같이 합니다.

| 통신사 | DNS 서버 | |
|-------|--------|--------------|
| LG U+ | 기본 | 211.36.129.4 |
| | 보조 | 117.111.29.4 |

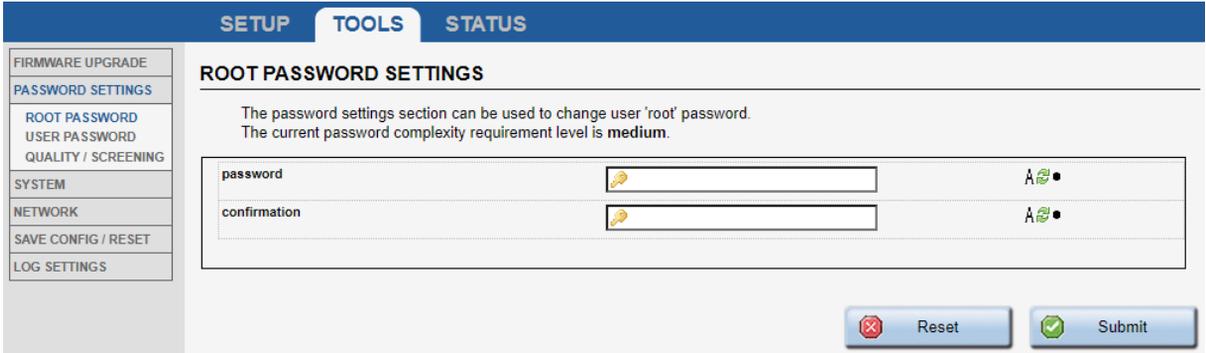
1. PC에서 command 창을 통해 ACKSYS LTE 제품에 ping을 전송합니다.
ping이 아래처럼 진행되지 않으면 로컬 네트워크 영역을 다시한번 확인해주세요.



2. 인터넷 브라우저(반드시 크롬 사용)의 주소창에 192.168.1.253 입력하면 로그인 창이 나타나는데 Password 항목에 acksys를 입력 후 로그인을 클릭합니다. (소문자로 입력)



제품 보안상 초기 사용 시 패스워드는 acksys로 설정되어 있습니다.
추후 패스워드 변경은 TOOLS > PASSWORD SETTINGS > ROOT PASSWORD에서 변경 가능합니다.



※ 패스워드 분실 시 제품을 초기화 해야하므로 꼭 기억해 두시기 바랍니다.

3. SETUP 메뉴의 WAN INTERFACE에서 ACTIONS을 클릭 후 Cellular 설정을 진행합니다.

SETUP TOOLS STATUS

PHYSICAL INTERFACES
WIFI
CELLULAR
LAN1
LAN2

VIRTUAL INTERFACES
BRIDGING
NETWORK
VPN
ROUTING / FIREWALL
SECURITY
QOS
DYNAMIC DNS
SERVICES

WIRELESS INTERFACES OVERVIEW

You can set up several simultaneous roles (wifi interface types) per radio card, among the following combinations:

| Combination | Channel selection | | Max number of interfaces | | | |
|------------------------|---------------------------------|-------------|--------------------------|-----------------------|------------|--------|
| | Multiplicity | Can use DFS | Access point | Infrastructure client | Mesh point | Ad-hoc |
| Multiple access points | single, auto, multiple | yes | 8 | | | |
| Portal | single | no | 8 | | 1 | |
| Client / bridge | single, auto, multiple, roaming | yes | | 1 | | |
| Other / repeater | single | no | 8 | 1 (non-roaming) | 1 | 1 |

When using several roles, they all use the same shared channel; in this case, the client role must not be set to multichannel roaming. Repeater mode is a combination of two roles: access point + client.

WI-FI INTERFACE

Wi-Fi 4 (802.11n) Wireless interface [Toggle Off]

| CHANNEL | 802.11 MODE | SSID | ROLE | SECURITY | ACTIONS |
|-----------|-------------|--------|-------------------------------|----------|--------------------|
| Automatic | 802.11b+g+n | acksys | Access Point (infrastructure) | none | Interface disabled |

WAN INTERFACE

3G/4G/LTE Cellular radio (Cellular) [Toggle On]

| FRIENDLY NAME | ACTIONS |
|---------------|------------------|
| Cellular | [Edit] [Refresh] |

GLOBAL WIFI PARAMETERS

RADIO REGULATION AREA
Country: United States

RADIO CLUSTER
Cluster mode: Do not group

[Save] [Save & Apply]

SIM1 탭에서 다음과 같이 설정 후 Save 버튼으로 저장합니다.

SIM card 1 PIN code : 0000

Auto APN : 체크 해제

SIM card 1 access point (APN) : m2m-static-server.lguplus.co.kr

SETUP TOOLS STATUS

PHYSICAL INTERFACES
WIFI
CELLULAR
LAN1
LAN2

VIRTUAL INTERFACES
BRIDGING
NETWORK
VPN
ROUTING / FIREWALL
SECURITY
QOS
DYNAMIC DNS
SERVICES

WAN SETTINGS - CELLULAR

On this page you can configure a WAN interface.

CELLULAR

General Setup **SIM 1** SIM 2 Advanced Settings

SIM card 1 PIN code: 0000
Enter the correct SLOT 1 PIN code or you might lock your sim card!

Auto APN: APN inferred from SIM card data

SIM card 1 access point (APN): m2m-static-server.lguplus.co.kr
Required except for LTE-only connections

Authentication protocol: SIM only

[Reset] **[Save]** [Save & Apply]

이제 부터는 각 페이지에서 설정 후 Save 버튼으로 저장하세요.

SETUP > NETWORK

SETUP
TOOLS
STATUS

- PHYSICAL INTERFACES
- VIRTUAL INTERFACES
- BRIDGING
- NETWORK
- LAN CELLULAR
- VPN
- ROUTING / FIREWALL

NETWORK OVERVIEW

| NAME | ENABLED | IPv6 ADDRESS | IPv6 GATEWAY | IPv4 ADDRESS | NETMASK | IPv4 GATEWAY (METRIC) | PERSISTENCE | ACTIONS |
|----------|-------------------------------------|--------------|--------------|---------------|---------------|-----------------------|-------------|----------------------------|
| lan | <input checked="" type="checkbox"/> | | | 192.168.1.253 | 255.255.255.0 | | Default | ✎ |
| Cellular | <input checked="" type="checkbox"/> | | | DHCP | | DHCP (0) | Default | WAN config |

+ Add network

IP, Netmask, gateway를 환경에 맞게 입력해주세요.

SETUP
TOOLS
STATUS

- PHYSICAL INTERFACES
- VIRTUAL INTERFACES
- BRIDGING
- NETWORK
- LAN CELLULAR
- VPN
- ROUTING / FIREWALL
- SECURITY
- QOS
- DYNAMIC DNS
- SERVICES

NETWORK - LAN

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

COMMON CONFIGURATION

General Setup

Interfaces Settings

Advanced Settings

Enable interface

Network description

? Friendly name for your network

Protocol static

IPv6-Address

? CIDR-Notation: address/prefix

Default IPv6 gateway

Delegated prefix length 60

? The assigned prefix(es) size for this interface

Allowed prefix classes all

IPv6 interface ID MAC of interface

? IPv6 suffix use for this interface with delegated prefix

IPv4-Address 192.168.1.253

IPv4-Netmask 255.255.255.0

Default IPv4 gateway

Default gateway metric 0

SETUP > ROUTING/FIREWALL > NETWORK ZONES

SETUP TOOLS STATUS

PHYSICAL INTERFACES
VIRTUAL INTERFACES
BRIDGING
NETWORK
VPN
ROUTING / FIREWALL
DOS PROTECTION
MULTICAST ROUTING
NETWORK ZONES
STATIC ROUTES

NETWORK ZONES OVERVIEW

| NAME | COVERED NETWORKS | FORWARD TO DESTINATION ZONE | IP MASQUERADING | LOCAL SERVICES | ACTIONS |
|------|------------------|-----------------------------|-------------------------------------|----------------|---------|
| wan | "Cellular" | - | <input checked="" type="checkbox"/> | All enabled | |
| lan | lan | wan | <input type="checkbox"/> | All enabled | |

Add zone

펌웨어 버전 4.22.3.1 이후 부터는 LTE 사용을 위한 트래픽 포워딩 설정이 기본으로 되어 있고, 설정 변경 시 ACTIONS 버튼을 눌러 진행하시면 됩니다.

SETUP TOOLS STATUS

PHYSICAL INTERFACES
VIRTUAL INTERFACES
BRIDGING
NETWORK
VPN
ROUTING / FIREWALL
DOS PROTECTION
MULTICAST ROUTING
NETWORK ZONES
STATIC ROUTES
SECURITY
QOS
DYNAMIC DNS
SERVICES

NETWORK ZONES - ZONE SETTINGS

ZONE "WAN"

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

General Settings | Advanced Settings

Name: wan

Enable IPv4/IPv6 Masquerading: Only on public zones. Use for NAT/PAT routing
Warning: if using VRRP, the NATed network must be set to protocol NONE

MSS clamping:

Default acceptance policy for local services: All enabled

Covered networks: lan Cellular

INTER-ZONE FORWARDING

Use this section only if IP Masquerading is disabled on this zone.
The options below control the forwarding policies between this zone (wan) and other zones. Destination zones cover forwarded traffic originating from "wan". 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: lan wan

TRAFFIC FORWARD

Use this section only if IP Masquerading is enabled on this zone.
This section allow to redirect the input traffic on this zone to a device on other zone. Supports IPv6 addresses.

| 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

TRAFFIC FORWARD

특정 포트번호로 통신 필요 시 프로토콜과 포트번호, 목적지 주소를 기입합니다.

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 |
|-------------|------|-----------|----------------|-------------|--------------|----------------|------|
| LTE | aa | any | tcp | 8888 | 8888 | 192.168.1.206 | |

STATUS > NETWORK

설정을 마치고 제품이 재부팅 되면 유심카드가 인식되어 외부로 접속 가능한 인터넷 환경이 구축됩니다.

SETUP
TOOLS
STATUS

DEVICE INFO

NETWORK

BRIDGES

MULTICAST ROUTES

ROUTES

SECURITY

WIRELESS

CELLULAR

SERVICES

LOGS

INTERFACES

LAN

IP CONFIGURATION

IPv4 Stack
IPv4: 192.168.0.111 Netmask: 24 MTU: 1500

IPv6 Stack
IPv6: fdf7:be9a:ca36:0:209:90ff:fe02:da8a Netmask: 60 Scope: global
IPv6: fe80::209:90ff:fe02:da8a Netmask: 64 Scope: link

| GRAPH | PHYSICAL INTERFACE | MAC ADDRESS | TX COUNT (IN BYTES) | RX COUNT (IN BYTES) | INTERFACE MODE | MTU |
|-------|--------------------|-------------------|---------------------|---------------------|------------------------------------|------|
| | LAN1 | 00:09:90:02:da:8a | 3319193 | 839511 | Negotiated 1000 baseTX FD, link ok | 1500 |
| | LAN2 | 00:09:90:02:da:8b | 0 | 0 | no link | 1500 |

CELLULAR

IP CONFIGURATION

IPv4 Stack
IPv4: Netmask: 28 MTU: 1500

IPv6 Stack
IPv6: fe80::f8b6:6aff:fe04:d76c Netmask: 64 Scope: link

DHCP info: Lease time: 7200s

DNS server: 211.36.129.4 106.101.252.4

| GRAPH | PHYSICAL INTERFACE | MAC ADDRESS | TX COUNT (IN BYTES) | RX COUNT (IN BYTES) | INTERFACE MODE | MTU |
|-------|--------------------|-------------------|---------------------|---------------------|---|------|
| | Cellular | fa:b6:6a:04:d7:6c | 213010 | 231672 | Operator (home): LG U+ LGU+ SIM: Password accepted | 1500 |

참고사항

WiFi 네트워크 필요 시

1. WiFi 기능이 필요 시 항목을 활성화 합니다.

SETUP
TOOLS
STATUS

PHYSICAL INTERFACES

WIFI
CELLULAR
LAN1
LAN2

VIRTUAL INTERFACES

BRIDGING

NETWORK

VPN

ROUTING / FIREWALL

SECURITY

QOS

DYNAMIC DNS

SERVICES

WIRELESS INTERFACES OVERVIEW

You can set up several simultaneous roles (wifi interface types) per radio card, among the following combinations:

| Combination | Channel selection | | Max number of interfaces | | | |
|------------------------|---------------------------------|-------------|--------------------------|-----------------------|------------|--------|
| | Multiplicity | Can use DFS | Access point | Infrastructure client | Mesh point | Ad-hoc |
| Multiple access points | single, auto, multiple | yes | 8 | | | |
| Portal | single | no | 8 | | 1 | |
| Client / bridge | single, auto, multiple, roaming | yes | | 1 | | |
| Other / repeater | single | no | 8 | 1 (non-roaming) | 1 | 1 |

When using several roles, they all use the same shared channel; in this case, the client role must not be set to multichannel roaming.
Repeater mode is a combination of two roles: access point + client.

WI-FI INTERFACE

Wi-Fi 4 (802.11n) Wireless interface

| CHANNEL | 802.11 MODE | SSID | ROLE | SECURITY | ACTIONS |
|-----------|-------------|--------|-------------------------------|----------|---------|
| Automatic | 802.11b+g+n | acksys | Access Point (infrastructure) | none | |

WAN INTERFACE

3G/4G/LTE Cellular radio (Cellular)

| FRIENDLY NAME | ACTIONS |
|---------------|---------|
| Cellular | |

주파수, 채널, Role, ESSID 설정한 후 Save 버튼으로 저장합니다.

SETUP
TOOLS
STATUS

PHYSICAL INTERFACES

WIFI
CELLULAR
LAN1
LAN2

VIRTUAL INTERFACES

BRIDGING

NETWORK

VPN

ROUTING / FIREWALL

SECURITY

QOS

DYNAMIC DNS

SERVICES

WIRELESS SETTINGS : WIFI

The *Device Configuration* section covers physical settings of the radio hardware which is shared among all defined wireless networks. Per network settings like encryption or operation mode are in the *Interface Configuration*.
If SRCC role is selected, most of the *Device Configuration* is irrelevant (please refer to the product user guide).

DEVICE CONFIGURATION

General Setup
a/b/g Data Rates
802.11n Mcs
Advanced Settings

802.11 mode: 802.11b+g+n (2.4 GHz)
Changing the mode may affect the list in the 'a/b/g data rates' tab

HT mode: 20MHz
Automatic 40MHz HT mode is not compatible with AP, Ad-hoc, Mesh and multi-interfaces

Automatic channel select: Automatic channel select is not compatible with Ad-hoc, Mesh and multi-interfaces

Exclude DFS channels: if checked, ACS will never select a DFS channel

The Max Tx Power mentioned above is the legal limit for the selected country, it may be higher than the effective maximum power that can be provided by the radio card

INTERFACE CONFIGURATION

General Setup
Wireless Security
Advanced Settings
MAC Filter
Frame filters

Role: Access Point (infrastructure)

ESSID: acksys

Maximum simultaneous associations: 128
Specifies the maximum number of clients to connect

Hide ESSID: In order to comply with the DFS regulation, clients might not associate if you check this option and select a DFS channel. See the user guide for more details.

Network:
 lan:
 Cellular:
 unspecified -or- create:
Choose the network you want to attach this wireless interface to

← Back to Overview

⊗ Reset

✔ Save

➤ Save & Apply

2. 네트워크 메뉴에서 Add network 버튼을 눌러 WiFi 인터페이스를 추가합니다.

SETUP TOOLS STATUS

NETWORK OVERVIEW

| NAME | ENABLED | IPv6 ADDRESS | IPv6 GATEWAY | IPv4 ADDRESS | NETMASK | IPv4 GATEWAY (METRIC) | PERSISTENCE | ACTIONS |
|----------|-------------------------------------|--------------|--------------|---------------|---------------|-----------------------|-------------|-------------|
| lan | <input checked="" type="checkbox"/> | | | 192.168.0.111 | 255.255.255.0 | | Default | |
| Cellular | <input checked="" type="checkbox"/> | | | DHCP | | DHCP (0) | Default | WAN config. |

Add network

SETUP TOOLS STATUS

NETWORK - NET1

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

COMMON CONFIGURATION

General Setup | Interfaces Settings | Advanced Settings

Enable interface

Network description WiFi
 Friendly name for your network

Protocol DHCP

hostname
 the product hostname is sent to the DHCP server

Delegated prefix length 64
 The assigned prefix(es) size for this interface

Allowed prefix classes all

Default gateway metric 0
 Gateway priority when several default gateways are configured; lowest is ch (Used only when a default gateway is defined on this interface)

DNS server(s)
 You can specify multiple IPv4 DNS servers here, press enter to add a new e will override automatically assigned ones.

IPv6 GLOBAL CONFIGURATION

IPv6 ULA Prefix

SETUP TOOLS STATUS

NETWORK OVERVIEW

| NAME | ENABLED | IPv6 ADDRESS | IPv6 GATEWAY | IPv4 ADDRESS | NETMASK | IPv4 GATEWAY (METRIC) | PERSISTENCE | ACTIONS |
|----------|-------------------------------------|--------------|--------------|---------------|---------------|-----------------------|-------------|-------------|
| lan | <input checked="" type="checkbox"/> | | | 192.168.0.111 | 255.255.255.0 | | Default | |
| WiFi | <input checked="" type="checkbox"/> | | | DHCP | | DHCP (1) | Default | |
| Cellular | <input checked="" type="checkbox"/> | | | DHCP | | DHCP (0) | Default | WAN config. |

Add network

3. NETWORK ZONES 메뉴에서 Add zone 버튼을 눌러 WiFi 네트워크를 추가합니다.

NETWORK ZONES OVERVIEW

| NAME | COVERED NETWORKS | FORWARD TO DESTINATION ZONE | IP MASQUERADING | LOCAL SERVICES | ACTIONS |
|------|------------------|-----------------------------|-------------------------------------|----------------|---------|
| wan | "Cellular" | - | <input checked="" type="checkbox"/> | All enabled | |
| lan | lan | wan | <input type="checkbox"/> | All enabled | |

Add zone

Enable IPv4/IPv6 Masquerading과 Covered Networks에서 WiFi를 체크합니다.

NETWORK ZONES - ZONE SETTINGS

ZONE "WiFi"

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

General Settings | **Advanced Settings**

Name: WiFi

Enable IPv4/IPv6 Masquerading Only on public zones. Use for NAT/PAT routing. Warning: if using VRRP, the NATed network must be set.

MSS clamping:

Default acceptance policy for local services: All enabled You can restrict or open the local services in the fire...

Covered networks

lan:

WiFi: (no interfaces attached)

Cellular:

INTER-ZONE FORWARDING

Use this section only if IP Masquerading is disabled on this zone.

The options below control the forwarding policies between this zone (WiFi) and other zones. Destination zone from "WiFi". The forwarding rule is *unidirectional*, e.g. a forward from lan to wan does *not* imply a permis...

Allow forwarding to destination zones:

lan lan:

wan Cellular:

NETWORK ZONES OVERVIEW

| NAME | COVERED NETWORKS | FORWARD TO DESTINATION ZONE | IP MASQUERADING | LOCAL SERVICES | ACTIONS |
|------|------------------|-----------------------------|-------------------------------------|----------------|---------|
| wan | "Cellular" | - | <input checked="" type="checkbox"/> | All enabled | |
| lan | lan | wan | <input type="checkbox"/> | All enabled | |
| WiFi | "WiFi" | - | <input checked="" type="checkbox"/> | All enabled | |

Add zone

4. WiFi와 lan 네트워크를 연결하기 위해 lan의 ACTIONS 버튼을 클릭합니다.

NETWORK ZONES OVERVIEW

| NAME | COVERED NETWORKS | FORWARD TO DESTINATION ZONE | IP MASQUERADING | LOCAL SERVICES | ACTIONS |
|------|------------------|-----------------------------|-------------------------------------|----------------|---------|
| wan | "Cellular" | - | <input checked="" type="checkbox"/> | All enabled | |
| lan | lan | wan | <input type="checkbox"/> | All enabled | |
| WiFi | "WiFi" | - | <input checked="" type="checkbox"/> | All enabled | |

Add zone

INTER-ZONE FORWARDING에서 WiFi를 체크합니다.

NETWORK ZONES - ZONE SETTINGS

ZONE "LAN"

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

General Settings | **Advanced Settings**

Name: lan

Enable IPv4/IPv6 Masquerading: Only on public zones. Use for NAT/PAT routing
Warning: if using VRRP, the NATed network must be set to primary

MSS clamping:

Default acceptance policy for local services: All enabled
You can restrict or open the local services in the firewall

Covered networks:

- lan:
- WiFi: (no interfaces attached)
- Cellular:

INTER-ZONE FORWARDING

Use this section only if IP Masquerading is disabled on this zone.

The options below control the forwarding policies between this zone (lan) and other zones. Destination zones can be "lan". The forwarding rule is unidirectional, e.g. a forward from lan to wan does not imply a permission to forward from wan to lan.

Allow forwarding to destination zones:

- WiFi: WiFi: (empty)
- wan: Cellular:

NETWORK ZONES OVERVIEW

| NAME | COVERED NETWORKS | FORWARD TO DESTINATION ZONE | IP MASQUERADING | LOCAL SERVICES | ACTIONS |
|------|------------------|-----------------------------|-------------------------------------|----------------|---------|
| wan | "Cellular" | - | <input checked="" type="checkbox"/> | All enabled | |
| lan | lan | WiFi wan | <input type="checkbox"/> | All enabled | |
| WiFi | "WiFi" | - | <input checked="" type="checkbox"/> | All enabled | |

Add zone