

## 시스코 통합 네트워크에서 ACKSYS 제품 적용 (WaveOS)

시스코 통합 네트워크는 "lightweight" AP와 AP 컨트롤러로 구성됩니다.

시스코 통합 네트워크는 타사 브릿지 장치를 허용하지 않으므로, 이 환경에 ACKSYS 제품을 사용하기 위해서는 ACKSYS 제품의 "NAT" 기능을 활성화 해야 합니다. 그렇게 하면 ACKSYS 제품은 시스코 네트워크에 브릿지로 나타나지 않는 대신 NAT 게이트웨이로 표시됩니다. 시스코는 "passive clients" 모드로 구현됩니다. 이 모드는 타사 브릿지 장치를 사용하는 데 권장되는 솔루션입니다.

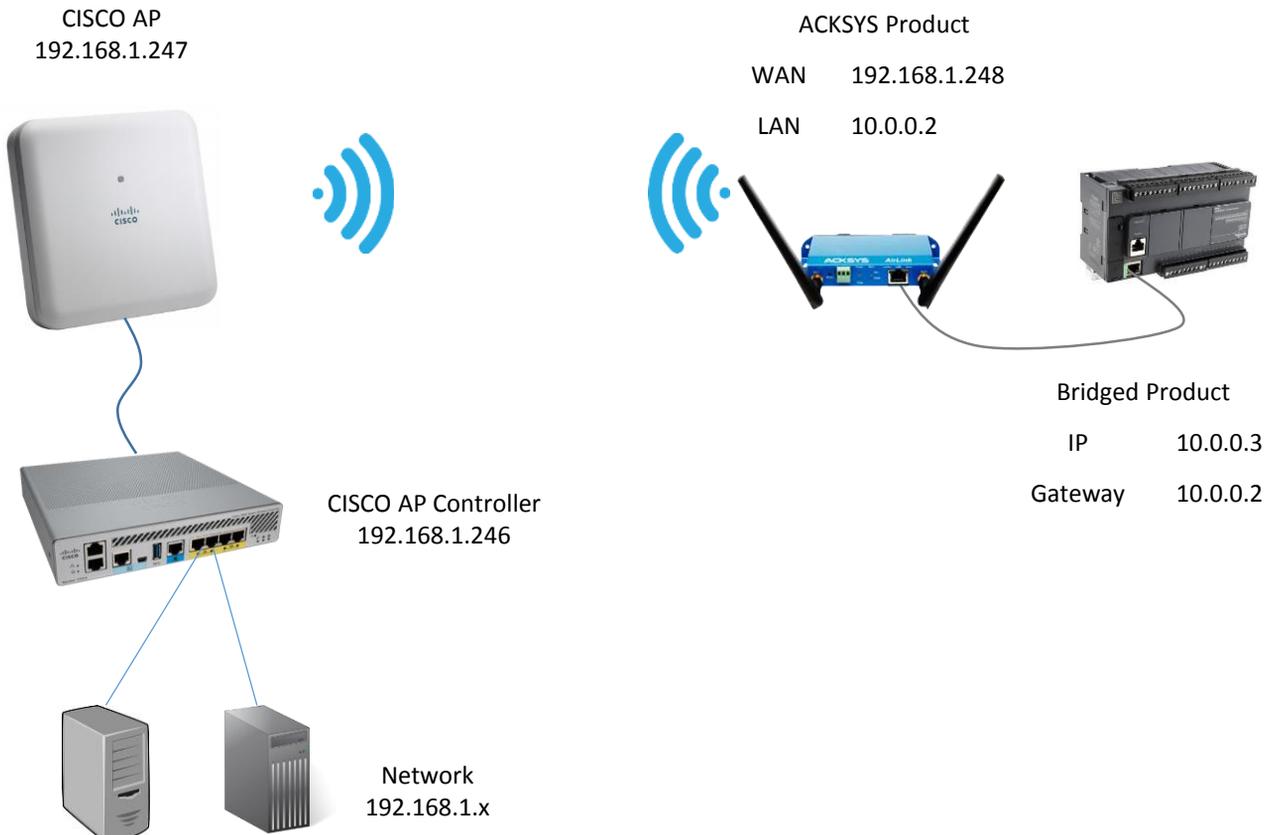
1. WaveOS로 동작되는 ACKSYS 제품으로 준비해주세요.
2. NAT 게이트웨이는 "레벨 3 브릿지"로 서로 다른 IP 주소 범위를 가져야하는 두 개의 서브 네트워크로 네트워크를 분할합니다. 이는 "레벨 2 브릿지"와는 다른 것으로, 브릿지의 양쪽이 동일한 IP 네트워크 주소를 공유하는 AP/브릿지 조합입니다.

### NAT architecture

NAT (Network Address Translation, 네트워크 주소 변환)는 private 주소 (LAN이라 칭함)를 외부 public 주소 (WAN이라 칭함)로 변환하는 데 사용됩니다.

예를 들어 IP 주소는 NAT 양쪽이 다른 서브 네트워크를 가지고 있습니다. 여기에 한쪽이 192.168.1.X 의 서브 네트워크를 가지고 있고 다른 한쪽은 10.0.0.X 의 서브 네트워크를 가지고 있습니다.

이 NAT 구조에서 ACKSYS 제품의 LAN 인터페이스 측 네트워크는 무선 인터페이스 측의 네트워크와 동일한 서브넷에 있지 않습니다. 고객의 백본 네트워크는 서브넷 192.168.1.X에 설정되고, 브릿지 된 네트워크는 서브넷 10.0.0.X에 설정됩니다.



## Enabling the NAT in the ACKSYS products

### 단계 1 : 무선 설정을 완료합니다. (주파수, 채널, Role(Client), SSID)

**(주의)**

- \* 노트북으로 테스트 시 **노트북의 무선 어댑터를 '사용 안함'**으로 해주시기 바랍니다.
- \* 각 페이지 설정 시 마다 **'Save'** 버튼을 눌러 저장해주시고, 설정을 모두 마친 후에는 **'Save & Apply'** 버튼으로 적용시켜 주시기 바랍니다.
- \* 구글 크롬 브라우저로 설정을 진행합니다.

**SETUP TOOLS STATUS**

**PHYSICAL INTERFACES**  
WIFI  
LAN

**VIRTUAL INTERFACES**  
NETWORK  
VPN  
BRIDGING  
ROUTING / FIREWALL  
QOS  
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: 802.11g+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

Channel: 8 (2.447 GHz) - Max Tx power 20 dBm ✓  
 3 (2.422 GHz) - Max Tx power 20 dBm  
 4 (2.427 GHz) - Max Tx power 20 dBm  
 5 (2.432 GHz) - Max Tx power 20 dBm  
 6 (2.437 GHz) - Max Tx power 20 dBm  
 7 (2.442 GHz) - Max Tx power 20 dBm  
This field is ignored in client proactive roaming mode; see 'Roaming' tab instead

**INTERFACE CONFIGURATION**

General Setup | Wireless Security | **Advanced Settings** | Roaming | Frame filters

Role: Client (infrastructure) ✓

Multiple ESSIDs:

ESSID: acksys ✓

Network:  Wireless:  private:

Choose the network you want to attach this wireless interface to

Back to Overview | Reset | Save | Save & Apply

## 단계 2 : Network 설정을 완료합니다. (WAN(Wireless), LAN(private))

NAME	ENABLED	IP ADDRESS	NETMASK	GATEWAY (METRIC)	PERSISTENCE	ACTIONS
Wireless	<input checked="" type="checkbox"/>	192.168.1.248	255.255.255.0		Enabled	
private	<input checked="" type="checkbox"/>	10.0.0.2	255.255.255.0		Default	

(Network 설정 완료 화면)

### Network – Wireless – General Setup 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: Wireless  
Friendly name for your network

Protocol: static

IPv4-Address: 192.168.1.248

IPv4-Netmask: 255.255.255.0

WAN 네트워크에 필요한 이름설정과 AP와 통신가능한 IP 대역을 입력합니다.

### Network – Wireless – 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

Bridge interfaces  creates a bridge over specified interface(s)

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

Interface  Ethernet adapter: LAN (private)  WIFI adapter: WIFI - acksys (Wireless)

MTU: 1500

브릿지 인터페이스 및 AP와 통신할 WiFi를 활성화시킵니다.

## Network – Private – General Setup Tab

**PHYSICAL INTERFACES**  
**VIRTUAL INTERFACES**  
**NETWORK**  
 WIRELESS PRIVATE  
 VPN  
 BRIDGING  
 ROUTING / FIREWALL  
 QOS  
 SERVICES

**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

Enable interface

Network description private  
Friendly name for your network

Protocol static

IPv4-Address 10.0.0.2

IPv4-Netmask 255.255.255.0

Default IPv4 gateway

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

DNS server(s)

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

LAN 네트워크에 필요한 이름설정과 통신가능한 IP 대역을 입력합니다.

## Network – Private – Interfaces Settings Tab

**PHYSICAL INTERFACES**  
**VIRTUAL INTERFACES**  
**NETWORK**  
 WIRELESS PRIVATE  
 VPN  
 BRIDGING  
 ROUTING / FIREWALL  
 QOS  
 SERVICES

**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

Bridge interfaces  creates a bridge over specified interface(s)

Interface  
 Ethernet adapter: LAN (private)  
 WiFi adapter: WiFi - acksys (Wireless)

MTU 1500

내부 LAN 네트워크를 사용하기 위해 LAN을 활성화시킵니다.

## 단계 3 : Network ZONES 설정을 완료합니다. (WAN(Wireless), LAN(private))

NAME	COVERED NETWORKS	FORWARD TO DESTINATION ZONE	NAT ENABLE	LOCAL SERVICES	ACTIONS
zone_lan	"Wireless"	-	<input checked="" type="checkbox"/>	All enabled	
zone_private	"private"	zone_lan	<input type="checkbox"/>	All enabled	

(Network ZONES 설정 완료 화면)

## ROUTING/FIREWALL - NETWORK ZONES(Wireless) - General Setup Tab

**ZONE "ZONE\_LAN"**

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

**General Settings** | **Advanced Settings**

Name: zone\_lan

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

Covered networks:  Wireless:  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\_lan) and other zones. Destination zones cover forwarded traffic originating from "zone\_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 as well.

Allow forwarding to destination zones:  zone\_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	
zone_lan	webservice	any	tcp	8080	80	localhost	↑ ↓	
zone_lan	all	any	all			10.0.0.2	↑ ↓	
zone_lan	800	any	tcp	800	800	10.0.0.2	↑ ↓	

NAT 게이트웨이 역할에 필요한 이름과 활성화 체크 후 Wireless를 선택합니다. 그리고 통신에 필요한 포트번호를 입력하여 규칙을 정의해줍니다.

## ROUTING/FIREWALL - NETWORK ZONES(private) - General Setup Tab

SETUP
TOOLS
STATUS

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

### NETWORK ZONES - ZONE SETTINGS

ZONE "ZONE\_PRIVATE"

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

General Settings

Advanced Settings

**Name**

**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**

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

**Covered networks**

Wireless:

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\_private) and other zones. Destination zones cover forwarded traffic originating from "zone\_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:**  zone\_lan Wireless:

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							

내부 private에 필요한 이름을 지정한 후 변환될 네트워크의 private LAN 체크를 확인합니다. 그리고 포트포워딩 될 Wireless에 체크합니다.

이로써 NAT 설정을 마쳤습니다. NAT 모드에서 모든 브릿지 된 제품은 NAT 게이트웨이의 단일 IP 주소로 AP와 통신하며, 내부적으로 설정한 포트번호의 규칙에 따라 데이터를 주고 받습니다.