



# ***Bridging in Cisco Unified Network***

## ***Application note***

The Cisco Unified Network is composed of “lightweight” access points and an Access point controller.

The Cisco Unified Network does not allow the use of third-party bridge devices. To use ACKSYS products in this architecture you need to activate the “NAT” function in your ACKSYS product. Then the ACKSYS product will not appear as a bridge to the Cisco network, instead it will appear as an Internet gateway, more specifically a NAT gateway.

In the ACKSYS “Wlg-” products series, the NAT function is a subfunction of the “bridge” WI-Fi mode. This application note explains how to activate the NAT in these products.

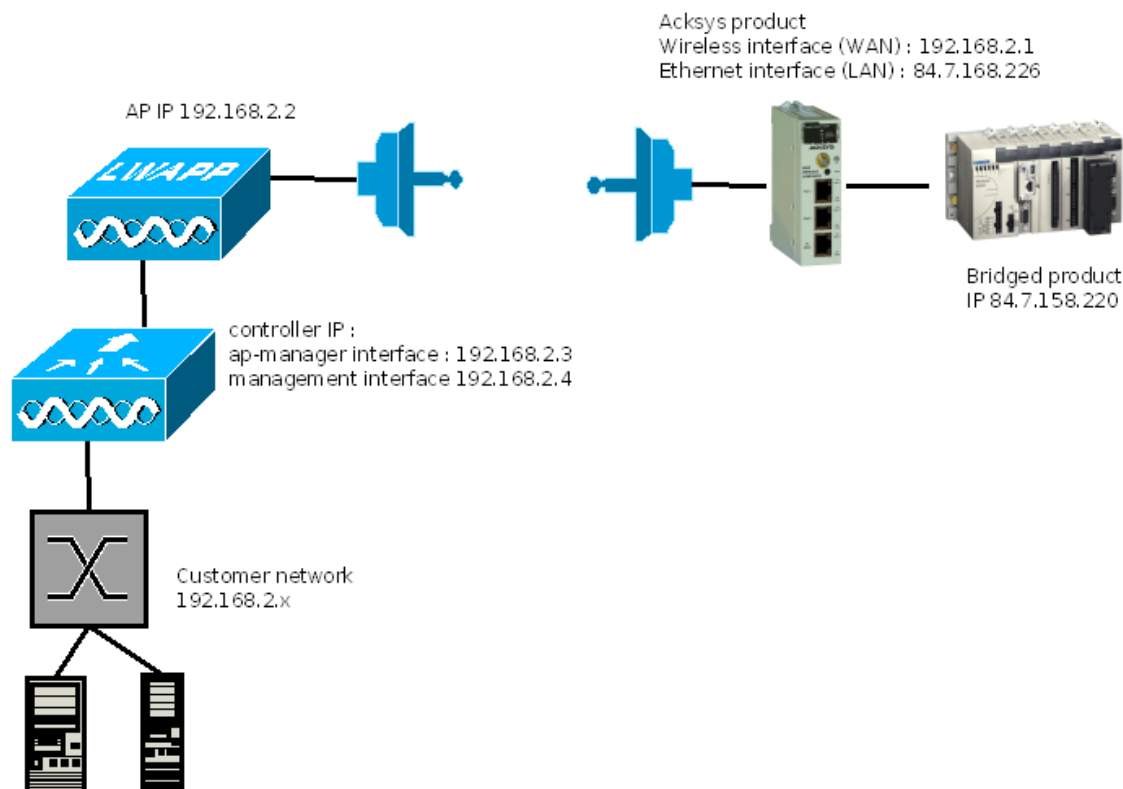
**NOTE 1:** To use this application note you will need the Wlg firmware version 5.18.3 or higher.

**NOTE 2:** A NAT gateway is a “level 3 bridge” and splits the network in two subnetworks, which must have different IP address ranges. This is different from a “level 2 bridge”, which is an AP/bridge combination where both sides of the bridge share the same IP network address.

**NOTE 3:** Cisco Lightweight access points, forbid quick association with third party devices. This can adversely affect roaming performance. Autonomous Cisco access points do not seem to exhibit this behavior.

## NAT architecture

The shown IP addresses are examples. They can be changed as long as the two sides of the NAT have different subnetwork parts. Here, one side has a subnetwork part of 192.168.2.\* and the other side has a subnetwork part of 84.\*.\* (the asterisks stand for the device address inside the subnetwork).



In the NAT architecture the network on the LAN interface side of the ACKSYS product (LAN network) is not on the same subnet that the network on the Wireless interface side (WAN network).

In the example the customer's backbone network is set on the subnet 192.168.2.0 and the bridged network is set on subnet 84.0.0.0

## Addressing in the NAT architecture

The ACKSYS product can be accessed from the wireless side, with the IP address set in the "Basic → NAT" page described later (i.e. 192.168.2.1 in the example).

The devices on the LAN side of the ACKSYS product can be accessed from the wireless side, with the IP address set in the "Basic → NAT" page (i.e. 192.168.2.1 in the example) **but you must specify port forwarding rules before it works.**

The ACKSYS product can be accessed from its Ethernet interface side, with the IP address set in the "Basic → LAN" page (i.e. 84.7.158.226 in the example).

The devices on the wireless side of the ACKSYS product can be accessed with their proper address, **provided that a route through the NAT** was configured in those devices. (i.e. in the example: set "default route = 84.7.158.226" in the M340 bridged product at 84.7.158.220)

## Enabling the NAT in the ACKSYS products

### STEP 1:

In menu Basic → Wireless:

- Set the Wi-Fi mode to Bridge
- Reboot now if required to do so, then return to the Basic → Wireless page
- Set the Wireless mode to Infrastructure
- Set relevant Wi-Fi parameters as required (SSID, channel and so on)
- Save settings **without** rebooting

**BASIC WIRELESS SETTINGS**

Wifi Mode :  Bridge  Access Point

Wireless Mode :  Infrastructure  Ad-Hoc

Wireless Network Name :  (Also called the SSID)

802.11 Mode :

Super AG™ Mode :

Region / Country :

Auto channel select :

Channel :

Antenna :

Transmission Rate :  (Mbit/s)

To make multiple selections/deselect from the list, use Ctrl+Click

### STEP 2:

In menu Basic → NAT:

- Enable the NAT (more parameters appear then)
- If your network uses a DHCP server set IP address mode to DHCP
- If your network doesn't use a DHCP server set IP address mode to static
  - You must enter the IP information for your network in this case

**NAT ENABLE**

Enable NAT :

**INTERNALS SERVERS CONFIGURATION**

Enable ping from WAN :

Enable internal web server from the WAN :

Web server port :

Enable internal SNMP server from the WAN :

SNMP server port :

**WAN IP CONFIGURATION**

IP Address Mode :  Static  DHCP

IP Address :

Subnet Mask :

Gateway :

### STEP 3 :

In Basic → Lan

- If your network uses a DHCP server set IP address mode to DHCP
- If your network doesn't use a DHCP server set IP address mode to static
  - You must enter the IP information for your network in this case

LAN SETTINGS	
IP Address Mode :	<input checked="" type="radio"/> Static <input type="radio"/> DHCP
Host Name :	<input type="text" value="AckSysWLM54"/>
IP Address :	<input type="text" value="192.168.1.59"/>
Subnet Mask :	<input type="text" value="255.255.255.0"/>
Gateway :	<input type="text" value="192.168.1.1"/>
Local Domain Name :	<input type="text"/> (optional)

### STEP 4:

- Save and reboot the product to apply settings

After reboot, the product will associate with the CISCO access point.

## Change settings in the bridged product

The ACKSYS product in this setting is a gateway for the bridged network.

You need to configure in the bridged product, a default route (or a route to the backbone addresses) using the IP address of the ACKSYS product LAN interface as the gateway.

## Set port forwarding

In NAT mode, all bridged products are hidden behind the Bridge as having a single IP address, namely the address of the bridge. To access to the bridged devices services from your network you need to set one port forwarding rule for each service.

In the Basic → NAT web page you can set a port forwarding.

PORT FORWARDING	
Enable :	<input checked="" type="checkbox"/>
Name :	<input type="text"/>
IP Address :	<input type="text" value="0.0.0.0"/>
Public TCP Ports :	<input type="text"/> (ie : 100-200,588)
Private TCP Ports :	<input type="text"/> (ie : 100-200,588)
Public UDP Ports :	<input type="text"/> (ie : 100-200,588)
Private UDP Ports :	<input type="text"/> (ie : 100-200,588)
<input type="button" value="Save"/> <input type="button" value="Clear"/>	

For detailed information on these settings, please refer to the full documentation provided on the ACKSYS CD-ROM and on the ACKSYS website: « Wlg product user guide (DTUS061)» chapter IV.7.1.