

# How to plan a Net2 wireless installation

## Overview

Net2 wireless controllers (Net2 PaxLock, Net2 PaxLock Pro, Net2 Nano) are recommended when a hard-wired solution cannot be achieved or is not appropriate, such as for controlling a car park gate, or numerous internal doors where cabling would be expensive.

These wireless controllers can be used alongside hardwired controllers, so can easily be added to existing Net2 installations.

## Wired or Wireless?

You should consider the merits of both wired and wireless systems when planning a Net2 installation. The best option may be to mix Net2 products using a hardwired solution in communal areas with a high footfall and wireless solutions in more open locations (warehouse, car parks, etc.) where cabling is difficult or would be expensive to install.

Also note that some of the Net2 features, (e.g. Fire Doors, Security Lockdown, Anti-passback) are not available when using a wireless solution.

## How many bridges will I need?

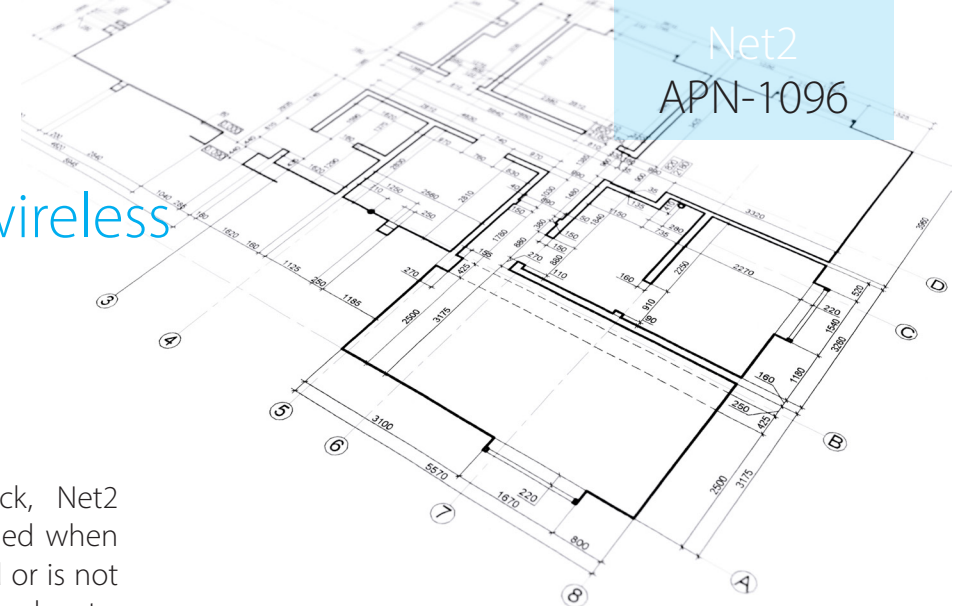
The typical range in an office environment is 15m/50ft. Where there is clear 'line of sight' across an open space, (open warehouse, car park, etc.) a range of 20m/65ft or more may be possible.

It is recommended that no more than 10 wireless controllers are connected to a single bridge to ensure the load is balanced across a site. When on site the ratio will often be closer to 5:1 to ensure that all wireless controllers are within range.

## Where should I locate the Net2Air bridge?

The Net2Air bridge has been designed so that it can be installed below the ceiling level and mounted centrally in a corridor or room, being the optimum location.

It should be positioned at least 3m away from any other wireless equipment to avoid interference. If it is not possible to install the bridge below the ceiling level, be mindful of the fixed obstructions highlighted further down in this application note.



The Net2Air bridge (477-600) can be installed in a 3rd party IP-rated enclosure, making it suitable for installation outside. This is recommended when installing a PaxLock Pro externally, helping to ensure optimal signal strength.

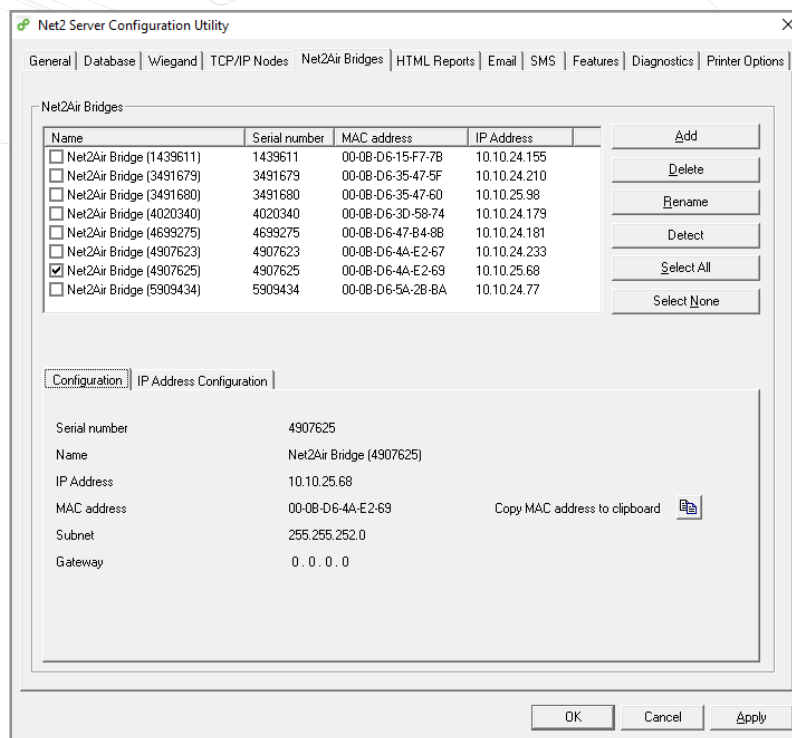
## Adding a Net2Air bridge to your system

Net2Air bridges are configured using the Net2 Server Configuration Utility, by selecting the 'Net2Air bridges' tab. Depending on the specific details of your Ethernet network, you may be able to detect the Net2Air bridges, simply by clicking Detect. If a bridge isn't detected, you can enter its Serial number and IP address manually or reset the bridge and try again.

**Note: When you press Detect all Net2Air bridges will beep once.**

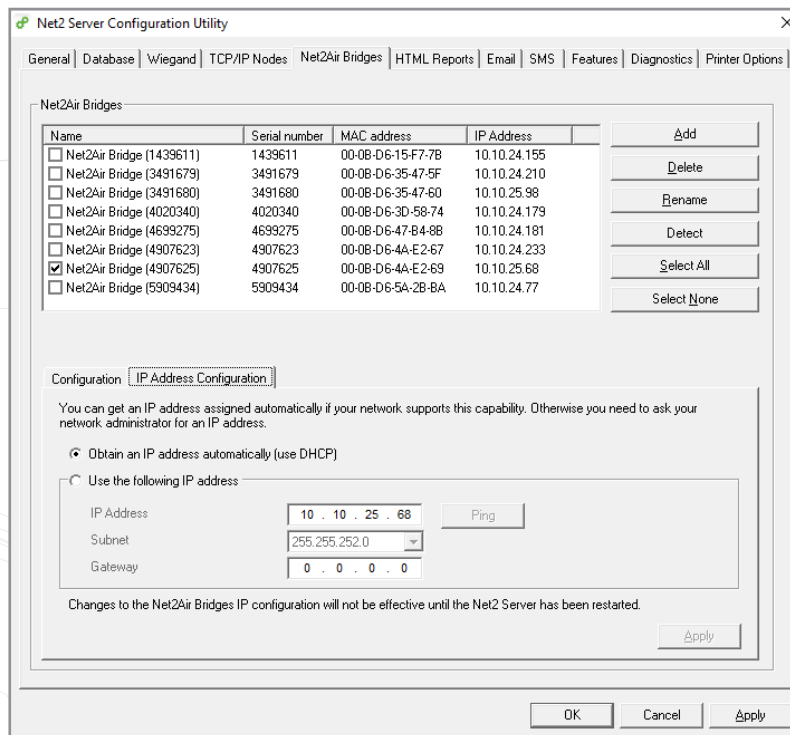
Once all your bridges have been detected tick the checkbox beside each bridge and press the 'Apply' button, this will bind them to your system.

Your PaxLocks can now be bound to the Net2 server, see AN1167 <[paxton.info/3094](http://paxton.info/3094)> for more information on this process.



## How do I give the Net2Air bridge an IP address?

If the Ethernet network does not have a DHCP server, then the IP address must be set manually, using the Net2 Server Configuration Utility. Select the IP address configuration tab. The network administrator should be able to advise you on suitable values to use. Check the 'Use the following IP address' button and enter the chosen address in the box. This will fix the IP address of the interface.



## Testing the performance

The only way to really be sure of optimal performance is to test the bridge in situ. To do this you will need... a laptop, copy of Net2, PoE injector, Net2Air bridge, several metres of Cat5 cable and a wireless controller.

1. Connect your Net2Air bridge to the PoE injector
2. Connect the data port of the PoE injector to the laptop with Net2
3. Bind the wireless controllers that you wish to test to the Net2Air bridge
4. Move the Net2Air bridge to the desired location and present a token to the wireless controller
5. The signal strength will be updated in the Net2 UI
6. If the signal strength is good, i.e. 4-5 bars you can install the bridge

## What can affect the wireless signal?

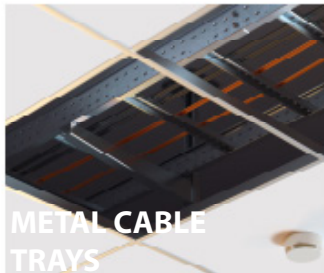
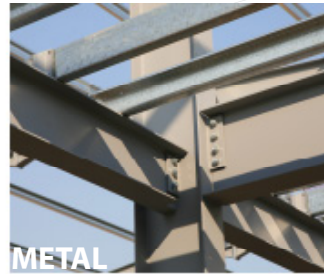
A low signal of 1-2 bars can be detrimental to the performance of the system. This is often apparent when either updating the firmware on a wireless controller or making a change that requires an update to be sent to the wireless controller, such as adding a token.

It is recommended to always aim for a 4-5 bar signal which ensures the system performs optimally and is resilient should there be any changes to the installed environment.

Many everyday objects will influence the strength of the signal. The most common of these are highlighted below. It is often not possible or practical to avoid these objects altogether, but it is important you are mindful of these when positioning the Net2Air bridge.

## Fixed obstructions

Building materials, fixtures and fittings will have an effect on the signal strength. While the signal is capable of passing through certain objects, doing so will reduce the range which needs to be considered during installation. Metallic objects will also cause the signal to reflect, which can cause a signal to fluctuate in strength.



## Movable obstructions



## Troubleshooting

Problem	Recommendation
I am only getting 1-2 bars signal strength	Always aim for line of sight between the Net2Air bridge and wireless controller if possible. If this is not feasible, check for the above-mentioned obstructions and/or relocate the Net2Air bridge.
The signal from the Net2Air bridge is intermittent	<p>Ensure that the Net2Air bridge is not located within 3m of any other wireless hardware.</p> <p>If the Net2Air Bridge has been installed above a suspended ceiling or in a riser cupboard, fixed obstructions around the bridge may be affecting the signal strength. It is always recommended where possible to install the bridge below ceiling level</p>
There is WiFi onsite, will this interfere with the signal?	The Net2Air bridge operates on the 802.15.4 frequency band on channel 25 by default. In most situations they will coexist without any issues. If there is significant WiFi activity on a site, it is recommended that WiFi channels 11, 12 & 13 are avoided which will reduce possible interference.
How do I reset the Net2Air bridge?	The bridge can be reset within 30 seconds of power up by depressing the reset button on the rear of the Net2Air bridge for 5 seconds.
Only the green LED is lighting up on the Net2Air bridge	This indicates that the Net2Air bridge is powered. Once the bridge has been connected to the Net2 server the red LED will light. The blue LED will only flash when data is being sent or received to a wireless controller.