# help desk

### Gateway missing - Reward offered! | By Wayne Howell

In recent columns I've looked at IP addressing and Ethernet lighting protocols, but what do you do if you've lost a gateway? One of the most frequent questions for our help desk is about a missing gateway. Given that 'gateway' is a generic term for a network-to-DMX512 convertor, the problem is really about finding the IP address of a 'lost' network device.

Assuming you have checked for hardware faults and concluded it's a configuration issue, you can use a computer with a network port as a test tool. To do that, the network adapter needs to be set up to 'talk' to the network you wish to debug. If you work with a lighting network comprising a number of components, you will almost certainly know the network address - it's the part of the IP address identical for all components on the network. Let's say that you have checked the lighting console and it's set to IP: 192.168.1.1 and Subnet mask: 255.255.255.0.

That means the network address is: 192.168.1.x (see *Help Desk* in *LSi November 2017* for more on networking). To form the IP address for the computer, replace the 'x' with any number below 255 that doesn't conflict with other IP addresses. Tip: pick a non-obvious number above 50 and below 200 - there's no technical reason, but most engineers I know use the low numbers or the high numbers). Let's choose 173, so the computer settings are IP: 192.168.1.173 and Subnet mask: 255.255.255.0.

To set up the network card to this in Windows, right-click Start and select *Network Connections*. Then click *Change adapter settings*. In the list of network interfaces, right-click the icon for your network port (ensure you identify the right one) and select *Properties*. *(below left)* Double-click on *Internet Protocol v4* (TCP/IPv4) - this opens the dialogue used to manually enter the IP address. Tick *Use the following IP address* and enter the new settings. *(below right)*
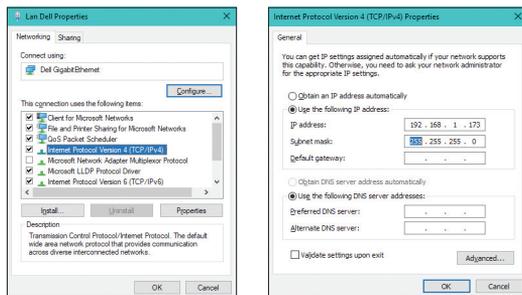



To discover the lost network, you need to use Ping. The name comes from the concept of a sonar ping - sending a pulse and looking for a reply. To get Ping, bring up the Command Prompt (type 'cmd' or 'command' in Windows search), type Ping /h and press enter. If you know the IP address of your lost gateway, try pinging it - for example, type 'Ping 192.168.1.96'. Ping will send four messages to that IP and display the results, as shown in below.
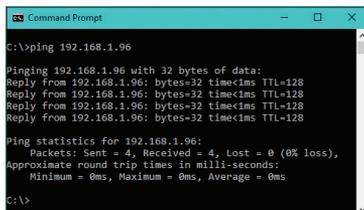


In the figure just below, a device at that IP address has responded to all four messages. By default, Windows doesn't allow the user to ping the broadcast address and see all devices that reply, but DMX-Workshop (available for free from the Artistic Licence website) offers this option.



With Ping, you need to try each address until you find your lost gateway. If you are using a 192. address, this is tedious but doable as there are only 254 combinations. However, with a 2. address, you would need to try every combination from Ping 2.0.0.1 to Ping 2.255.255.254, which would take a very, very long time . . .

DMX-Workshop must be run in administrator mode (right-click on the installed application icon and choose *Run as administrator*) because this allows it to get around limitations such as the ping broadcast problem described above.

When DMX-Workshop loads for the first time, it displays a dialogue to select the desired IP address. Select the IP address you configured previously (192.168.1.173 in my example). If you need to change it, you can get back to this dialogue by pressing NIC, the second button on the toolbar.

The third button, Ping Radar, is an advanced form of ping that will broadcast a ping to every network interface on the computer. It also broadcasts Art-Net commands to all the network interfaces and searches for an answer. All the responses are listed along with hotlinks to browse to the found device.
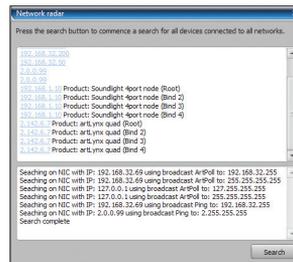


On the photo inset you can see a search for lost devices on a computer that has connections to network addresses of both 192.168.1.x and the 2.x.x.x. The Ping Radar has found gateways on both networks, which is almost certainly a misconfiguration - check each hotlink to see if you have located your lost gateway.

DMX-Workshop operates in network-promiscuous mode. This means it can listen to any network address - although it can only transmit on the IP address you've selected. This is very useful when locating lost network components. The first button, Node List, brings up a list of any Art-Net or sACN nodes that are 'talking' - even ones that are on a different network address. If this is the case, you will see a small 'no entry' icon next to the listing. However, it will display the IP address, allowing you to locate your lost gateway. In the screenshot below the computer is set to 2.0.0.99 but the gateway is at an inaccessible IP of 192.168.1.10.

Hopefully you will have located the lost gateway and 'won' your reward. If not, check this column next month when I will look at more network debugging techniques including Wireshark, NetBios, DHCP settings and factory resets. ✖
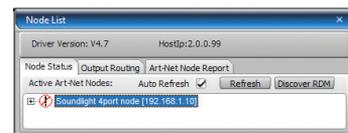
Wayne Howell is the CEO of Artistic Licence, the lighting controls company that he founded in 1988. Wayne invented Art-Net and is actively involved in the ESTA technical standards programme.