casa systems NS-02 CloudMesh Satellite Access Point User Guide

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Important notice
This device, like any wireless device, operates using radio signals which cannot guarantee the transmission and reception of data in all conditions. While the delay or loss of signal is rare, you should not rely solely on any wireless device for emergency communications or otherwise use the device in situations where the interruption of data connectivity could lead to death, personal injury, property damage, data loss, or other loss. NetComm Wireless accepts no responsibility for any loss or damage resulting from errors or delays in transmission or reception, or the failure of the NetComm wireless devices to transmit or receive such data.

Note – This document is subject to change without notice.

Document history
This document relates to the following product:

NetComm CloudMesh Satellite

Table i. – Document revision history

Ver.	Document description	Date
v1.00	First document release	14 July 2021

Contents [hide

Product features/functionality

Key features

- Automated Wi-Fi issue resolution with Wi-Fi Auto Pilot
- Seamless connection with a CloudMesh Gateway
- CloudMesh App for Wi-Fi Analytics and Troubleshooting
- LED light bar for indicating the optimal placement of each satellite
- Two Gigabit Ports for versatile connectivity
- Vertical PCB and Antenna design for increased Wi-Fi coverage and cooling
- Qualcomm-based chipset for powerful Wi-Fi
- Zero-touch setup, Cloud Orchestration and Seamless Wi-Fi Client Roaming for the best user experience

Interfaces

Front view

Fi gure 1 – Front view interface

Figure 1 – Front view interface

Table 1 – Front view interfaces

N o	Interface	Description
1	LED indicator	Provides a visual representation of the status of the CloudMesh Satellite. Refer to t he LED indicator section.

Rear view

Fi gure 2 – Rear view interfaces

Figure 2 – Rear view interfaces

Table 2 – Rear view interfaces

N o	Interface	Description
1	Ethernet ports	Gigabit Ethernet LAN ports. Can be used to connect clients in bridge mode
2	Power adapter p ort C	Connect the included power adapter here.
3	WPS button	Push this button within 2 minutes of pushing the 5GHz WPS button on the CloudM esh Gateway to connect (pair) them. During the pairing process, the LED indicator on the front side of the CloudMesh Satellite will be flashing purple.

Bottom view

Fi gure 3 – Bottom view interfaces

Table 3 – Bottom view interface

N o	Interface	Description
1	ON/OFF button	Turns the CloudMesh Satellite on or off.
2	Reset button	To reset the CloudMesh Satellite, insert a straightened paper clip or similarly shape d object into the small hole marked with the reset icon and hold for ten (10) second s.

Physical dimensions and weight

The table below lists the physical dimensions and weight of the CloudMesh Satellite

Table 4 – Physical dimensions and weight

Dimensions	
Width	113 mm
Height	145 mm
Depth	110 mm
Weight	320 grams

CloudMesh Satellite location

Your CloudMesh Satellite works best when it is placed in a central location to the area you want to cover. Ideally, it should be located no more than two rooms away from the CloudMesh Gateway. To increase the size of your mesh network, you can add multiple CloudMesh Satellites.

Fi gure 4 – Wi-Fi coverage diagram

Fi gure 4 - Wi-Fi coverage diagram

Common location considerations

If you have concerns about your network's performance that might be related to range or obstruction factors, try moving the device to a position between three to five metres from the CloudMesh Satellite or CloudMesh Gateway to see if distance is the problem.

Note

While some of the items listed below can affect network performance, they will not prohibit your wireless network from
functioning; if you are concerned that your network is not operating at its maximum effectiveness, this check list may help

Try not to place the CloudMesh Satellite near a cordless telephone that operates at the same radio frequency as the CloudMesh Satellite (2.4GHz/5GHz).

Avoiding obstacles and interference

Avoid placing your CloudMesh Satellite near devices that may emit radio "noise," such as microwave ovens.

If your wireless signal seems weak in some spots, make sure that objects such as those listed below are not blocking the signal's path between your devices and the CloudMesh Satellite.

Dense objects that can inhibit wireless communication include:

- Refrigerators
- Washers and/or dryers

- Metal cabinets
- Metallic-based, UV-tinted windows

Pairing the CloudMesh Satellite with your CloudMesh Gateway

Pre-configured (already paired)

If the CloudMesh Satellite and the CloudMesh Gateway have been pre-configured by your Internet Service Provider, the devices will already have been paired together and you can turn on both devices and begin using them.
To set up your CloudMesh Gateway and CloudMesh Satellite:

1. Turn on your CloudMesh Gateway (refer the CloudMesh Gateway User Guide) and connect to the Internet.
2. Position the CloudMesh Satellite near the CloudMesh Gateway (refer to CloudMesh Satellite location section of this guide, above).
3. Connect the power adapter to the CloudMesh Satellite. The LED flashes green then starts to flash blue after a minute or so.
4. Wait for up to 10 minutes as the CloudMesh Satellite attempts to pair with the CloudMesh Gateway.
   The LED flashes blue. When the Satellite has been paired with the Gateway, the LED will display as solid white, blue, or red, depending on the signal strength.

Important
If the LED is solid red, this means the signal is poor.
Reposition the Satellite closer to the Gateway.
Refer to CloudMesh Satellite locationsection of this guide, above.

The CloudMesh Satellite is now ready to use.

Pairing via WPS push button

If the CloudMesh Satellite and the CloudMesh Gateway have not been set up by your Internet Service Provider, you will need to pair them yourself. The CloudMesh Satellite can pair with a CloudMesh Gateway using the WPS (Wi-Fi Protected Setup™) functionality.

1. Place the CloudMesh Satellite next to your CloudMesh Gateway.
2. Connect power to both devices, switch them on and wait for them to power on. If the CloudMesh Satellite LED light is still flashing blue after 20 minutes, you will need to pair it with the CloudMesh Gateway manually.
3. Ensure that the CloudMesh Gateway is connected to the Internet.
4. Press and release the WPS button on the rear of the CloudMesh Satellite. The LED on the CloudMesh Satellite flashes purple to indicate that the WPS pairing window has started and will last for two minutes.
5. Press and release the WPS button on the CloudMesh Gateway while the CloudMesh Satellite LED is still flashing purple. The pairing process can take up to five minutes.
6. When the pairing process is complete, the CloudMesh Satellite's LED light will indicate signal strength. See the LED indicators section below.
7. Position the CloudMesh Satellite in the desired location in your premises and begin using your new mesh Wi-Fi network. You should refer to the LED signal strength table on the next page to determine the optimal location to achieve the best signal strength.

Pairing via Ethernet cable

An alternative pairing method to using WPS (see page 9) is to use the Ethernet cable (supplied with the satellite) connected to the Ethernet port of each device to pair the CloudMesh Satellite with a CloudMesh Gateway

1. Place the CloudMesh Satellite next to your CloudMesh Gateway.
2. Connect power to both devices, switch them on and wait for them to power on. If the CloudMesh Satellite LED light is still flashing blue after ten minutes, continue to step 3 to pair it with the CloudMesh Gateway manually.
3. Ensure that the CloudMesh Gateway is connected to the Internet.
4. Connect the Ethernet cable (supplied with the CloudMesh Satellite) into any of the LAN ports on the back of each device.
5. Allow up to ten minutes for the CloudMesh Satellite to download information from CloudMesh Gateway. The LED turns solid green, indicating that it has paired with the gateway.
6. Disconnect the Ethernet cable from both devices and wait 10 minutes. As the CloudMesh Satellite attempts to pair with the CloudMesh Gateway, the LED will flash pink.
7. Position the CloudMesh Satellite in the desired location in your premises and begin using your new mesh Wi-Fi network. You should refer to the LED signal strength table on the next page to determine the optimal location to achieve the best signal strength.

LED indicators

Your CloudMesh Satellite LED follows this sequence when first turned on.
Table 5 – LED sequence on power up

Sequence	LED	LED activity		Meaning
1			Blinking green	Powering up
2			Blinking blue	Ready for pairing

When connected to the CloudMesh Gateway, the LED shows the signal strength as follows:
Figure 5 – LED signal strength statuses

LED	LED activity		Meaning
		Solid white	Good signal
		Solid blue	Medium signal
		Solid red	Poor signal
		Blinking blue	No signal / too far from ga teway / not connected to mesh network
		Blinking purple	WPS pairing activated

The LED may also display the following statuses.

Figure 6 – Additional LED statuses

LED	LED activity		Meaning
		Solid pink	Paired but no Internet con nection
		Blinking purple	WPS pairing activated
		Blinking pink	Pairing in progress
		Solid green	Wired connection to the g ateway.

Connecting client devices

You can connect any number of Wi-Fi enabled client devices to the internet via the CloudMesh Satellite using the WPS (Wi-Fi Protected Setup™) functionality of each device.

In addition, you can connect two peripheral client devices using the Ethernet ports on the back of the CloudMesh Satellite.

Connect a client via WPS

The CloudMesh Satellite provides three methods to establish a connection with client devices:

- WPS (Wi-Fi Protected Setup™) functionality.
- Connection via Ethernet.
- Entering the Wi-Fi credentials into your client's wireless configuration options.

Connect a device using the WPS button (default setting)

1. Bring a WPS enabled device within Wi-Fi range and press the WPS button on the back of the CloudMesh Satellite.
2. The LED on the front of the CloudMesh Satellite flashes purple for up to two minutes.
3. When the device is connected, the WPS LED displays the signal strength (between the satellite and the gateway) listed in Figure 5.

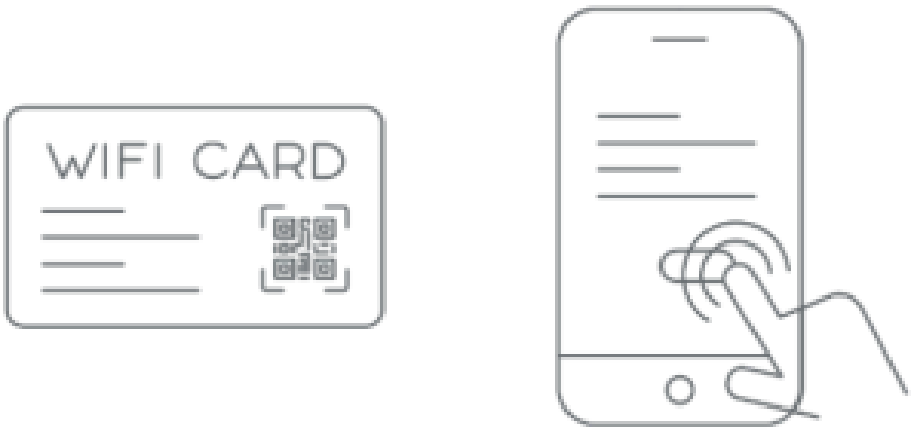
Connect a client via Ethernet cable

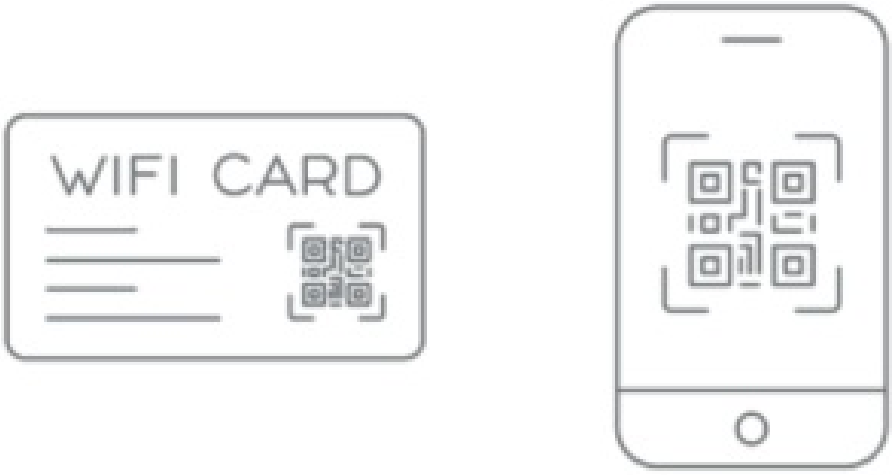
Alternatively, you can directly connect a device, for example a printer, to the CloudMesh Satellite using an Ethernet cable.

1. Connect the Ethernet cable provided to one of the yellow Ethernet ports on the bottom of the CloudMesh Satellite.
2. Connect the other end of the Ethernet cable to your client device.

Connect a client by entering wireless credentials
The Wi-Fi Security Card that ships with the CloudMesh Gateway includes your unique network name and password. Type the information into your wireless device when connecting or scan the QR code that is printed on the card. If you have changed the wireless network name (SSID) or password, select the wireless network from your client and enter the chosen password instead of the details listed on the Wi-Fi Security Card.

Figure 7 – Wi-Fi Security card





Turning off the LED light

In some locations, for example a bedroom, the LED light may become an unwanted distraction.
To control the display of the CloudMesh Satellite's LED light, press and hold the WPS button for six (6) seconds to switch the light's display between ON or OFF.
Figure 8 – Turn off LED display

Figure 8 – Turn off LED display

Web interface

The CloudMesh Satellite features a web interface for advanced configuration, though it is not required for everyday operation of the device.

Firmware upgrade

If a firmware update is released, you can apply it to the satellite by accessing the web interface. In situations where your gateway and satellite were provided to you pre configured by your Internet Service Provider, the firmware upgrade is remotely managed by the provider.

There are two ways of accessing the web interface of the satellite. The method to use depends on whether the CloudMesh Satellite is paired with the Gateway

If the CloudMesh Satellite is paired to a CloudMesh Gateway, you can access the web interface by typing its unique hostname into the address bar of a web browser.

The unique hostname for each CloudMesh Satellite is defined in the following format:

http://NS-02-XXXX.local
Where XXXX is the last four digits of the Satellite's unique serial number
Figure 9 – Last four digits of the serial number

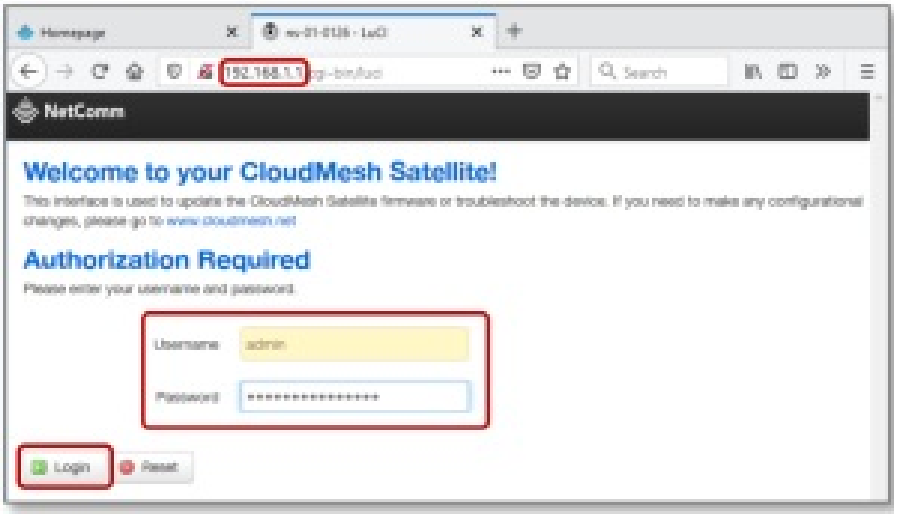
If the device is not paired, please first follow Appendix B – Set CloudMesh Satellite IP to access web interface to set up a static IP for the Satellite and then continue from step 3b of this section, below.

To access the Satellite's web interface:

1. Connect the supplied power adapter to the power port on the CloudMesh Satellite and plug the power adapter into a power point. Turn on the power at the wall and allow 60 – 90 seconds for the satellite to power up.
2. Connect the supplied Ethernet cable from one of the two yellow LAN ports on the bottom of the CloudMesh Satellite to an Ethernet port on your computer.
   Figure 10 – Ethernet cable connecting PC with CloudMesh Satellite

3. Open a web browser and type in the address of your Satellite:
   - If your CloudMesh Satellite is paired to a CloudMesh Gateway, type the unique hostname as described earlier in this section.
   - If your CloudMesh Satellite is not paired to a CloudMesh Gateway, type the static IP address that you defined using the instructions in Appendix B – Set CloudMesh Satellite IP to access web interface
4. **At the Authorization Required screen:**

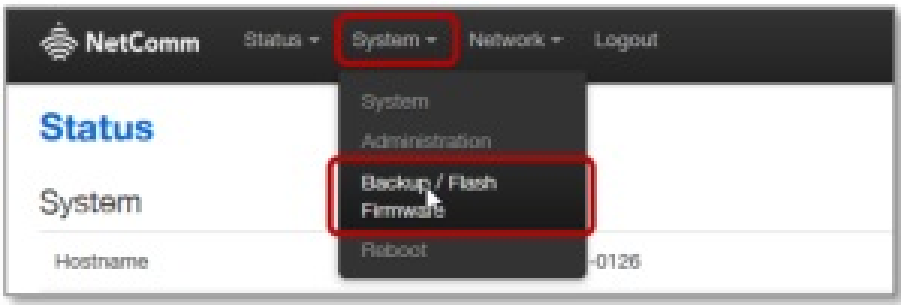
Fi gure 11 – Log in to NS-02 user interface



- Type admin into the Username field,
- Enter the serial number (Serial No) printed on the label on the label on the bottom of the satellite into the Password field, and
- Click the Login button. The status page is displayed.

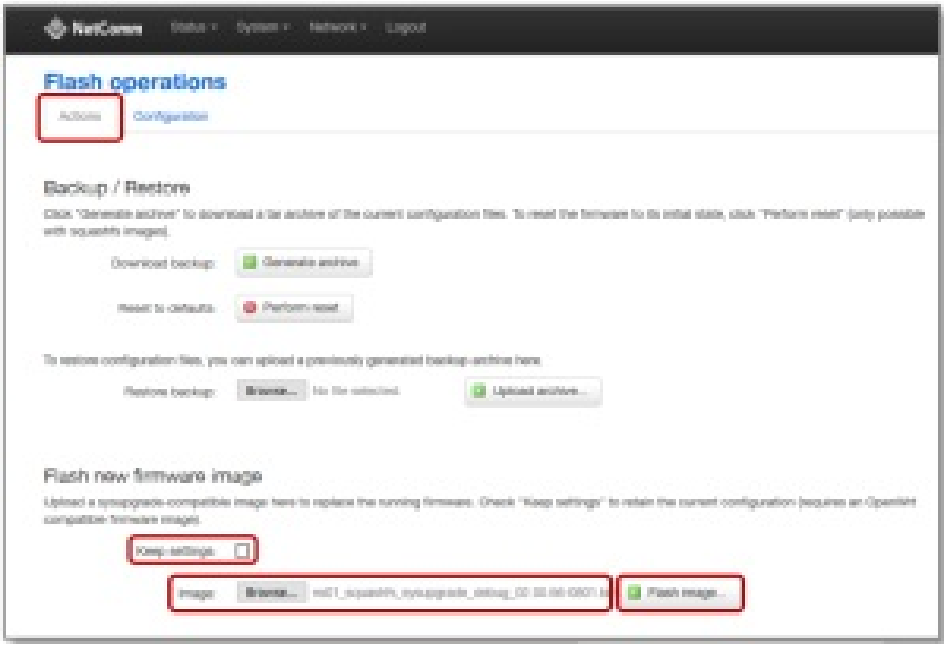
5. Select System > Backup/Flash Firmware from the menu in the toolbar of the screen:

   Figure 12 – Check current firmware version



6. From the Flash Operations screen, select the Actions tab and in the Flash new firmware image section make the following settings:
   - Deselect the Keep settings option.
   - Click the Browse button to locate and upload the firmware upgrade file.

     Figure 13 – Update firmware interface



When the file has been uploaded, its filename will appear immediately to the right of the Browse button.

7. Click the Flash image button to proceed. The system will read the file and ask you to Verify its details:

Figure 14 – Uploading in progress message

8. Click the Proceed button to finalise the upgrade process. A progress message page appears:

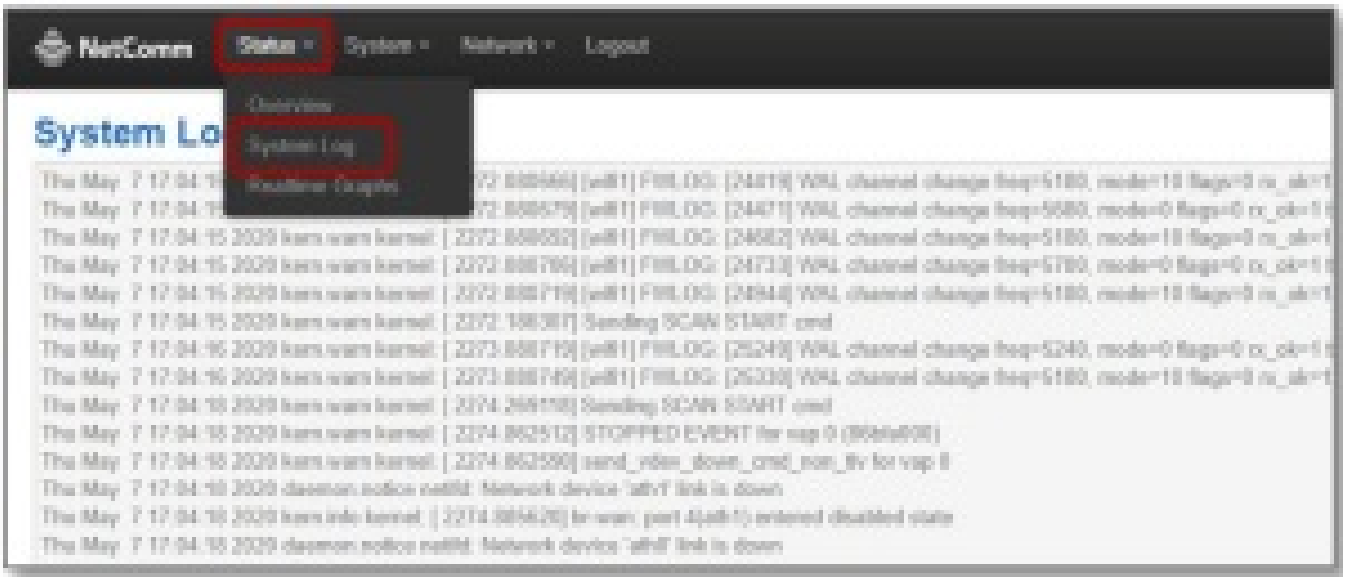
Figure 15 – Uploading in progress message

9. Wait four to six minutes and then refresh the page. The Authorization Required screen is displayed. The upgrade is complete.

Viewing the log

The CloudMesh Satellite compiles a chronological log of all recent events.
In the web interface, click Status in the main menu and select System Log from its drop-down menu.

Figure 16 – System Log

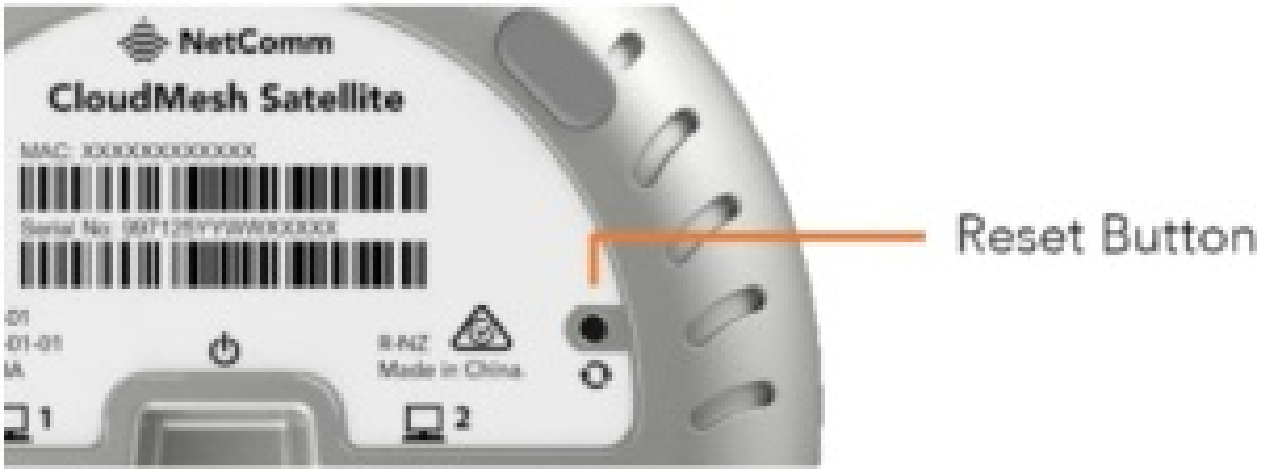


Each log entry has a date and timestamp and a short description of the event.

Resetting the CloudMesh Satellite

To reset the CloudMesh Satellite, insert a straightened paper clip or similarly shaped object into the small hole on the bottom of the satellite marked with the reset icon .

Figure 17 – Location of reset button on bottom



Press and hold the reset button for ten (10) seconds to return the satellite to its factory default settings.

Note

The gateway and its satellite(s) will still be paired once connected to the Internet.
You will not have to repeat the pairing process, just start both up, connect the gateway to the Internet and they will automatically
pair (this pairing process may take a few minutes).

Appendix A – Safety Information

Please read before use:

- **LOCATION**

  This device is designed for indoor use only.

- **AIRFLOW**

- Do not restrict airflow around the device.
- The device is air cooled and may overheat where airflow has been restricted.
- Always allow minimum clearance of 5cm around all sides and the top of the device.
- Do not cover, do not put in an enclosed space, do not put under or behind large items of furniture.
- Your device may become warm during normal use

- **ENVIRONMENT**

Do not place this device in direct sunlight or any hot areas. Safe operating temperature of this device is between 0° and 40°C

Do not allow this device to come in contact with any liquid or moisture. Do not place this device in any wet or humid areas such as kitchen, bathroom or laundry rooms.

- **POWER SUPPLY**

Always use only the power supply unit that came with the device. You should immediately stop using the power

supply unit if the cable or power supply unit is damaged.

- **SERVICE**

There are no user-serviceable components in the device.

Do not attempt to disassemble, repair, or modify the device.

- **SMALL CHILDREN**

Do not leave your device and its accessories within the reach of small children or allow them to play with it.

Your device contains small parts with sharp edges that may cause an injury or which could become detached and create a choking hazard.

- **RF EXPOSURE**

The device contains a transmitter and a receiver. When it is on, it receives and transmits RF energy. The device conforms with the radio frequency (RF)

exposure limits adopted by the Australian Communications and Media Authority Radiocommunications

(Electromagnetic

Radiation – Human Exposure) Standard 2014, when used at a distance of not less than 20 cm from the body.

- **PRODUCT HANDLING**

Always treat your device and its accessories with care and keep it in a clean and dust-free place.

Do not expose your device or its accessories to open flames.

Do not drop, throw or try to bend your device or its accessories.

Do not use harsh chemicals, cleaning solvents, or aerosols to clean the device or its accessories.

Do not paint your device or its accessories.

Please check local regulations for disposal of electronic products.

Arrange power and Ethernet cables in a manner such that they are not likely to be stepped on or have items placed on them.

Appendix B – Set CloudMesh SatelliteIP to access web interface

If your CloudMesh Satellite is not paired to a CloudMesh Gateway you can access the Satellite directly by setting a static IP address for your PC that is in the same subnet as the satellite.

As the CloudMesh Satellite does not have its own DHCP server, you must manually set the IP address of your PC to be in the 192.168.1.x subnet.

The static IP address cannot be 192.168.1.1 and must be any number in the range: 192.168.1.2 to 192.168.1.254

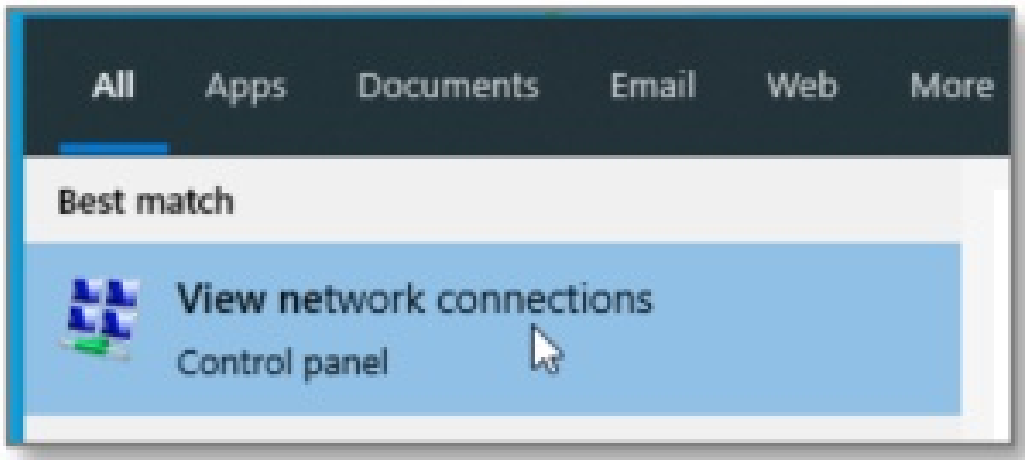
To set a static IP address on a Windows 10 system:

1. On the computer that you will use to connect to the Satellite, click the Windows Start button in the lower left:

   Figure 18 – Windows Start button

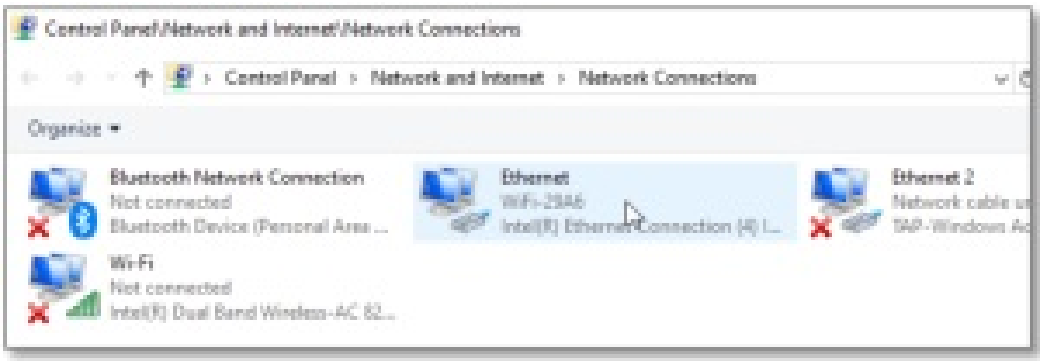
2. Type View Network Connections.
3. Select View Network Connections when it appears in the search results box.

Figure 19 – Select View network connections



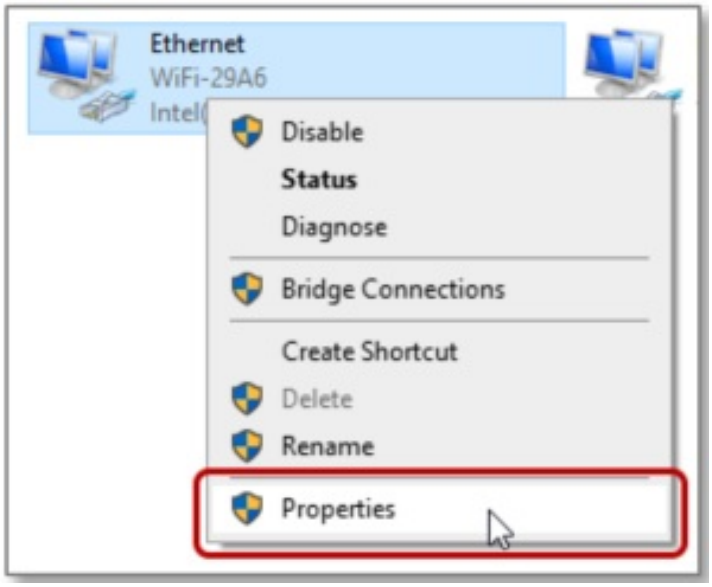
4. From the Network connections page, right click on the connection that you had used to connect to the Gateway

Figure 20 – List of Network Connections



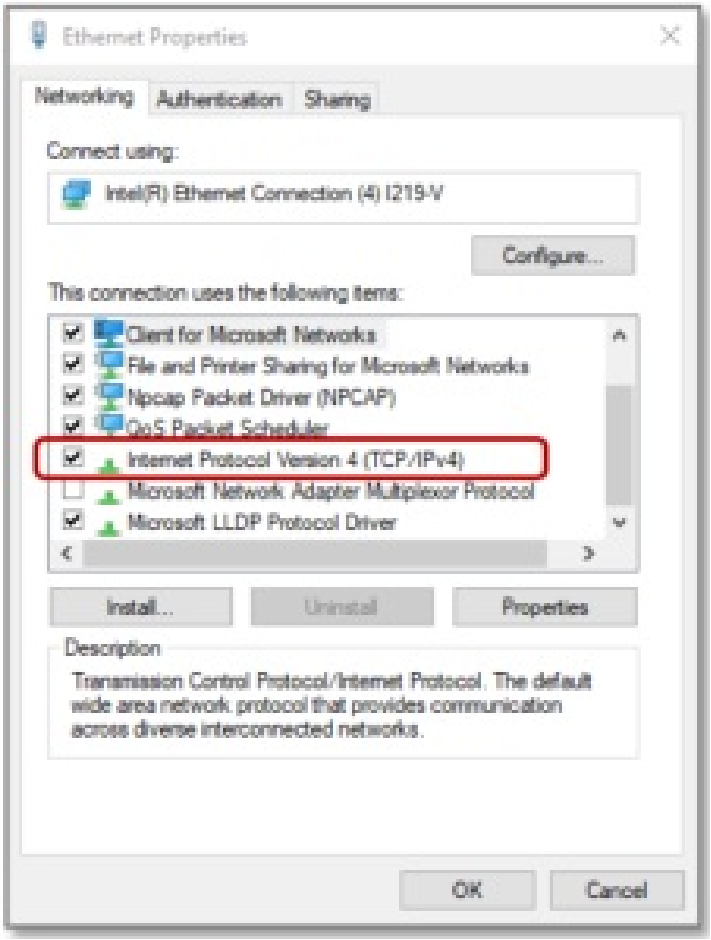
5. Select Properties from the popup menu:

Figure 21 – Select Properties for current connection



6. In the Networking tab of the Ethernet Propertiesdialog box, go to the list of This connection uses the following items:
7. ☒ Internet Protocol Version (TCP/IPv4)

Figure 22 – Select Internet Protocol Version (TCP/IPv4)



8. Double click on Internet Protocol Version (TCP/IPv4), see blue highlight above.
9. The Internet Protocol Version (TCP/IPv4) Properties page appears:

Figure 23 – Set the static IP address

10. Select Use the following IP address to enter the details of the new static IP address for the NS-02 CloudMesh Satellite:
    - In the IP address text box enter any IP address in the range: 192.168.1.2 to 192.168.1.254
    - In the Subnet mask text box enter: 255.255.255.0
    - In the Default gateway text box enter the IP address of the CloudMesh Satellite: 192.168.1.1
11. Click the OK button to close the Internet the Ethernet Properties dialog box.
12. Click the close button to close the Network connections page.

Documents / Resources

	casa systems NS-02 CloudMesh Satellite Access Point [pdf] User Guide NS-02, CloudMesh Satellite, Access Point, NS-02 CloudMesh Satellite Access Point