CnWave V1000

Initial Setup, Updating Firmware

Everything after physical install will be done through Ctools
Default login Info: username: admin Password: admin
Login after install Username: admin Password: tech@intellipop
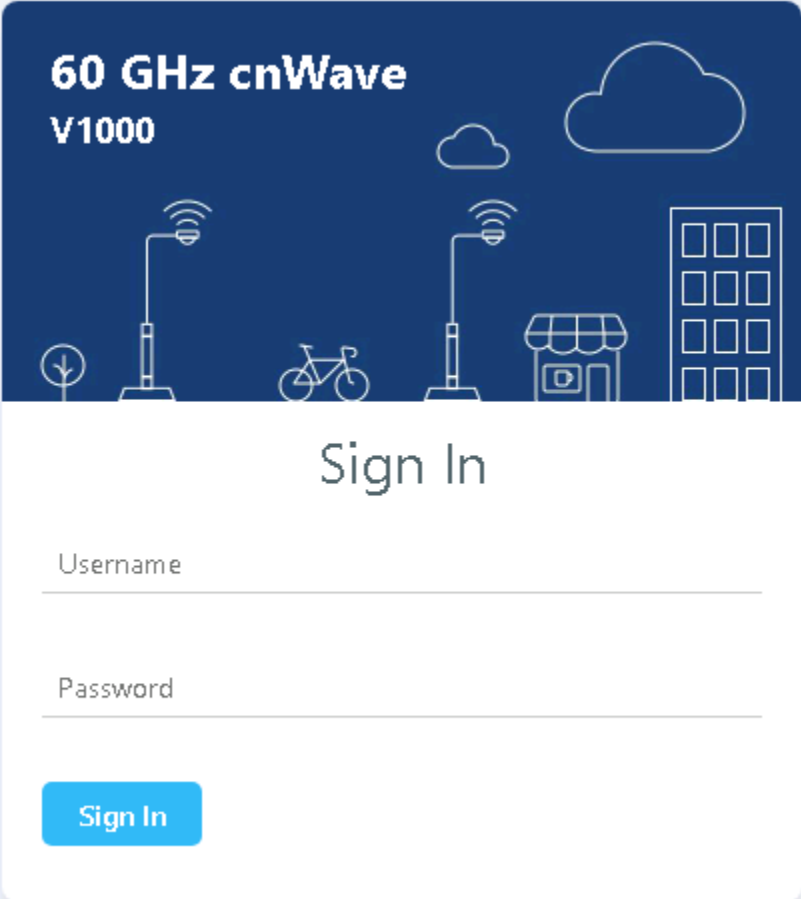
Updating firmware prior to install
+

check the firmware for the ring you are installing prior to updating, firmware can be downloaded from Cambiums support website
(https://support.cambiumnetworks.com/)

-We will want to first power on the device with the correct POE and plug a laptop in
-open a web browser and enter the default IP https://169.254.1.1 and it will take you to the login screen login with the following info *username: admin Password: admin*

- You will want to select the button labeled "Software Upgrade" as shown below

Uptime

96d 0h 37m

Software Upgrade

Device Information

Type	CN
Name	CID-1:
E2E Connection Status	Conne
MAC Address	00:04:
Serial Number	V5XD(
Model	V100C
Software Version	1.2-be

-You will then need to hit ""browse" this will pull up a file browser and select the appropriate file for the ring you will be installing on. And hit "Start Upgrade"
-You will want to ping the default ip using command prompt (169.254.1.1) until the radio comes back up.

Software Upgrade

Upgrading from E2E Controller/cnMaestro is recommended method. Please upgrade from here only for initial provisioning or cannot reach controller.

Upload File

Choose file	Browse

Start Upgrade

-After the radio comes back up you will want to log back into the radio and factory default it
-Click the "Tools" button on the left hand side of the screen

-The only option displayed on the screen will be "Factory Reset" hit that button and ping the device until it comes back up.

⚠ **Warning!**

Factory Reset should be done with great caution as device will come up with factory default configuration and all existing configuration will be lost.

☑ Reboot Device Automatically

Factory Reset

-After the radio comes back up check the software on the main dashboard and confirm it is the one you want after this the radio is ready for install
-notate the mac address for the NOC on the customers acct

Device Information

|	
Type	CN
Name	CID-1249
E2E Connection Status	Connected to 2606:ac0:0:4::5
MAC Address	00:04:56:8B:30:CD
Serial Number	V5XD034N3F0D
Model	V1000
Software Version	1.2-beta3
Firmware Version	10.11.0.87
Wireless Security	None
Layer 2 Bridge	Enabled (Tunnel Endpoint is 2606:a
System Time	Dec 11, 2021, 10:04:51 AM

-Adding site to Ctools
This is done in the NOC

-login to ctools and go to the section labeled " Monitor and Manage" on the left side. Shown below
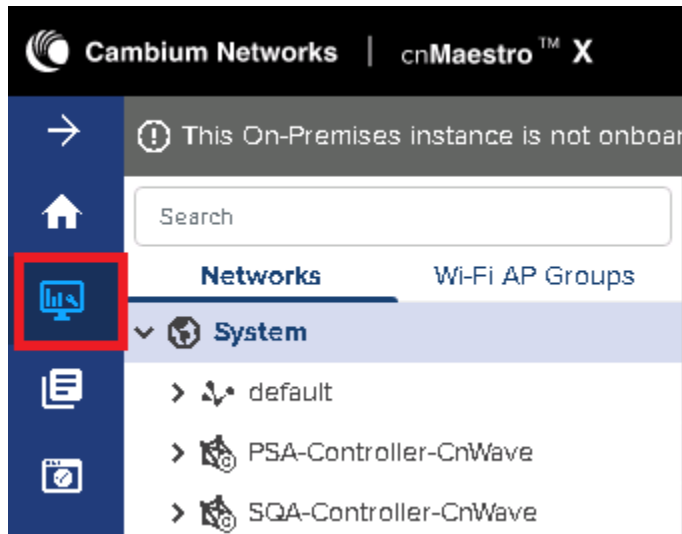
-you will then hover over the Controller on the left for the ring you are installing in, we are using PSA as an example
-Click the three dots that appear while hovering over the controller and click the button labeled "Add Site" shown below.
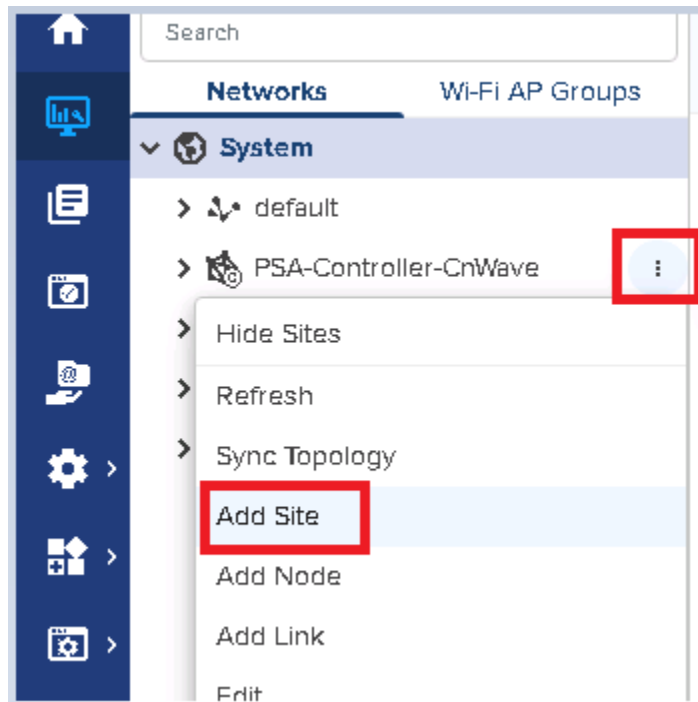
-After clicking the "Add Site" shown above you will be on a screen that wants you to input the site information. Fields that have text in red below are what you fill out.

-Name is going to be the customers CUID in powercode, format will be "CID-" with the actual CUID added in place of the asterisks below.

-You can use Google maps to get the latitude and longitude of the customers home, if unable to locate on a map the tech will need to get the lat and long while on site and provide that to you

-After this has been added you will hit save at the bottom of the screen, and the site will have been added to Ctools.Hit the dropdown arrow on the controller to see the list of sites and locate the one you just added.
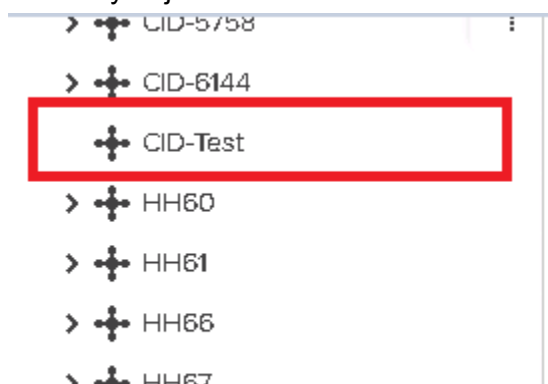
-If the site appears like it does above you are done until the device has been installed on site and is powered on.

-Calculating the Azimuth

-You will need the GPS coordinates for the customers home and the Hub Home they will be connecting to.
-You will want to open Google Earth and place a pin on the Hub home and the Customer's home

-After you can see where both sites are on the map you will need to click on the "Ruler" at the top of google earth to measure the distance of the link and get the Azimuth. Shown below

-You will then click on the **Customers home first** and then the **Hub Home second** after there will be a yellow line between the two sites and a box will be displaying the map length and

heading. If you are the installer add the Azimuth to powercode in the main notes for the acct. Shown below

Heading=Azimuth
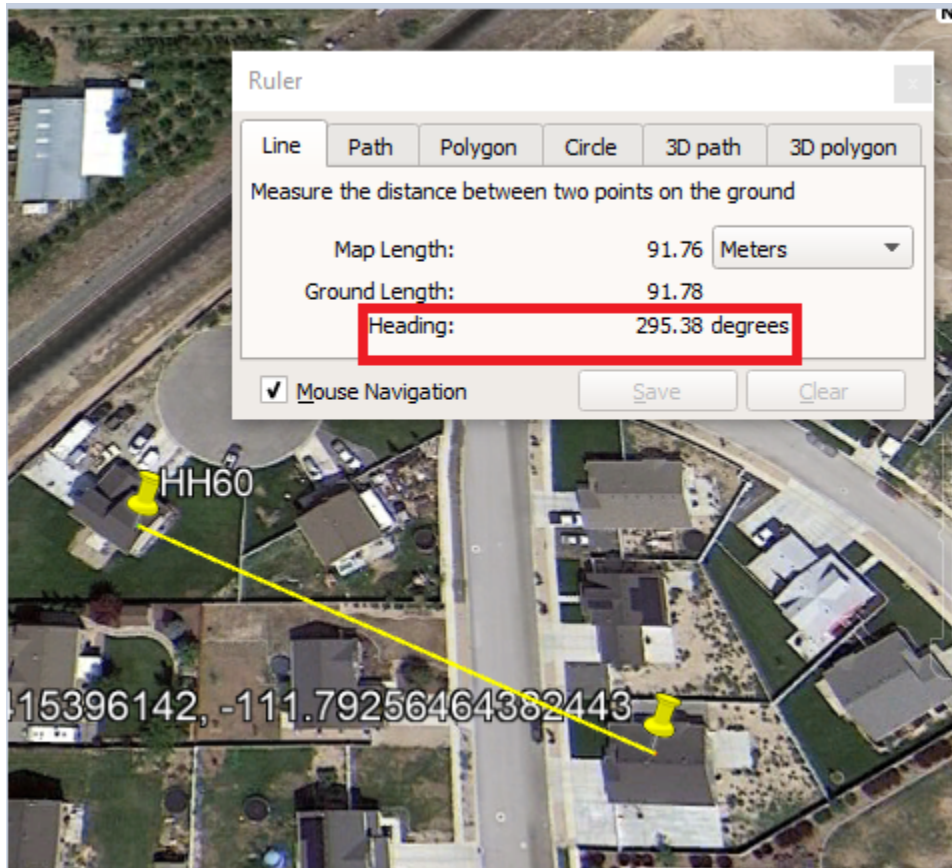
-Adding the device to Ctools

-you will find the site in the "Monitor and Manage". After you locate the site you will hover over it until the 3 dots appear on the right. You will then click the 3 dots to reveal a drop down menu
-You will then click the button labeled "Add Node" as shown below
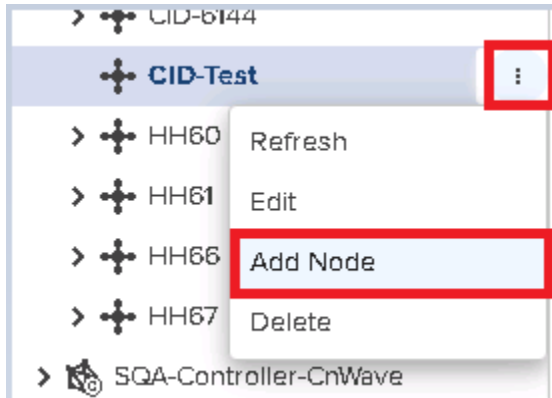
-After clicking that button you will need to enter the information for the actual device that will be used for the install. You will need to fill out the fields that have red text in them below. After hit save and the device has now been associated with that site. We will still need to add the link.

   -make sure the device is set as a CN

   -Azimuth is the heading of the device that is being installed.

-Adding the link to Ctools (Will need to be done by the NOC)

-Locate the Site in the "Monitor and Manage" tab. Hit the drop down arrow on the left of the site you are working with and you will see the node pop up below it.

  -hover over the device you are working with and you will see three dots pop up, click the three dots and select the button "Add Link" Shown below
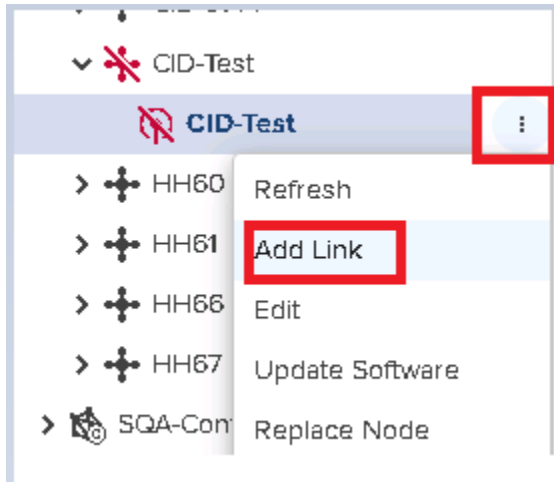
-You will now be setting up the link for the radio, you will only be making changes on the Z-Node and Z-node Sector

  -Z-Node will be the Hub home you are connecting to, you will want select the HH**DN for that box

  -Z-Node Sector will be the sector on the HH you are connecting to SECTOR1=BLUE, SECTOR2=YELLOW
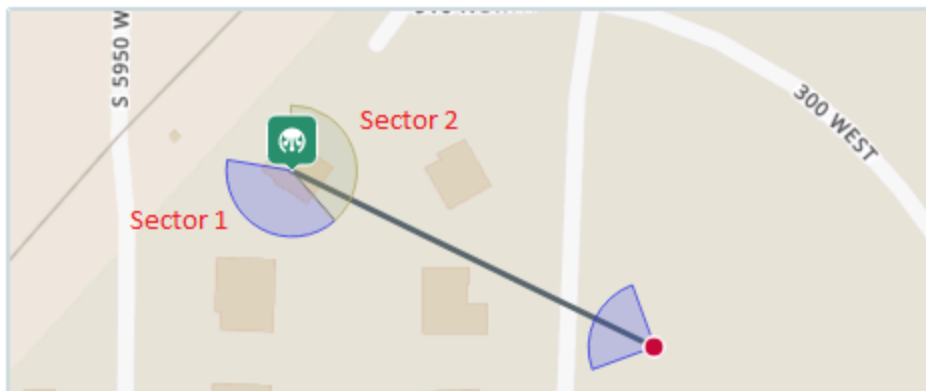
-After you hit save and add the link the radio should come up if you have done this correctly. The radio will come up and go down to download it's config after it comes back online you will need to add it to powercode.
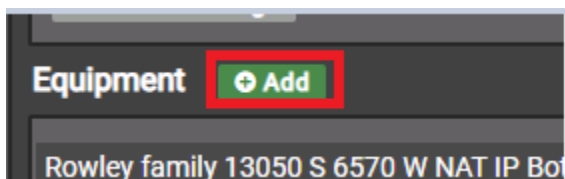
-Adding Device to Powercode

-You will want to open the site in ctools and open the dashboard for the device we just added

-We will then collect the IPv6 address and mac address of the device if we do not already have it. This info is located on the dashboard of the device in ctools under the Device Info section towards the bottom. Shown below
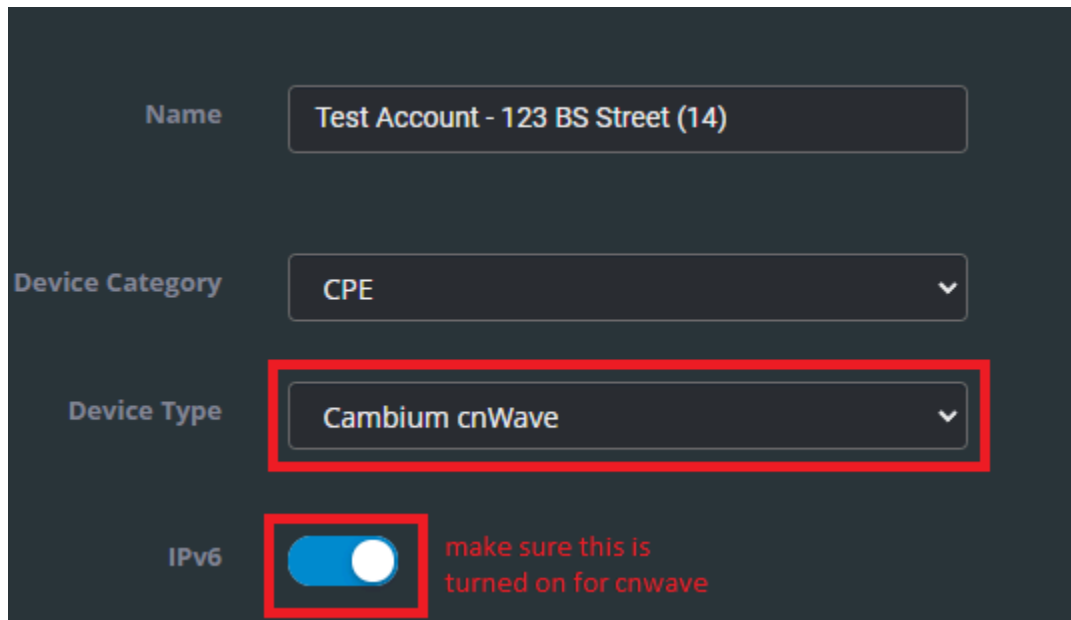

-You will then want to open the customers page in powercode and hit the green button labeled "+Add" in the equipment section.

-This will take you to the page to add all the information for the device in powercode, you will be entering the information that is highlighted by a red box in the following photos.

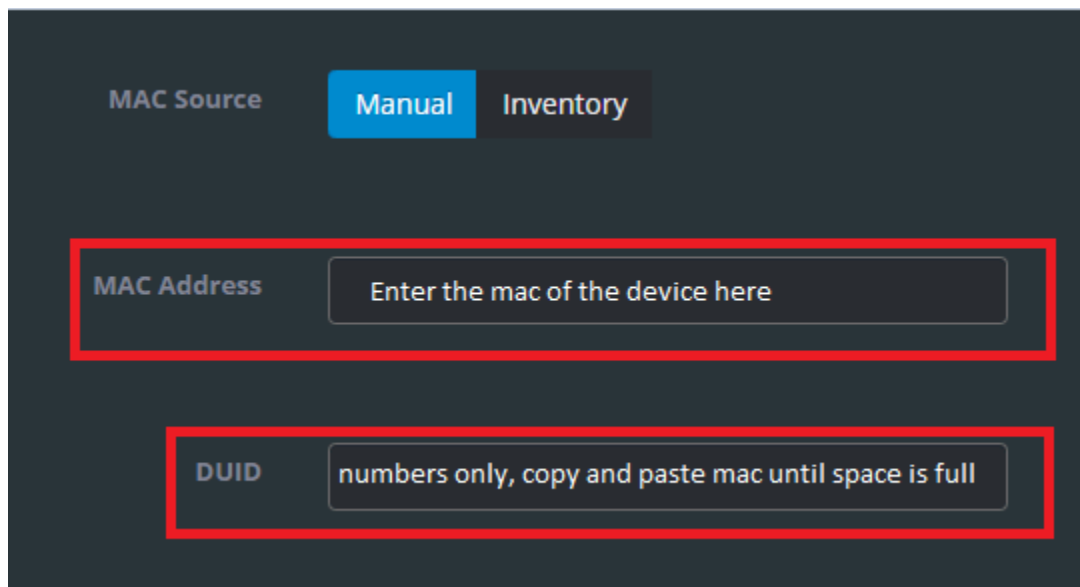-you will set the device type as "Cambium cnWave"
-toggle on the IPv6

-Scroll down to the box for "Mac Address/DUID" and enter the information in the boxes in red.

        -after you enter the DUID on this screen you will need to add it to piece of inventory in Powercode, the next image will show you how to do that
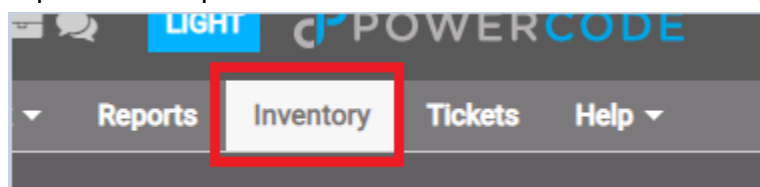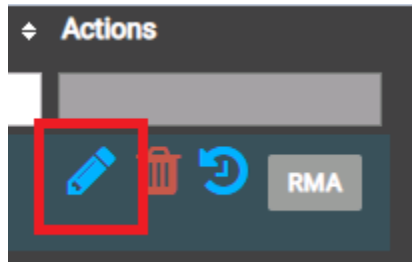

-Open another powercode tab and click on the button along the top bar labeled "Inventory"

-You will then need to look up the device using the mac address box

	Equipment		MAC		IMSI		DUID	
			00:04:56:C9:AB:60					

-After you locate the device you will want to click on the pencil on the far right of the screen for that specific device.

Actions
✏ 🗑 🕓 RMA

-You will now be on a screen where you can edit that device in powercode, you will need to enter the DUID you entered above into the DUID field on the inventory page. These need to match perfectly.

      -after you enter the DUID make sure you hit save on this page before you finish adding the device to the customer's account.

Product:	#26 - CNWAVE V1000 ▼
*Name:	V1000
*Assignee Type:	Customer | Network | Staff | **Stock**
*Stock Location:	#2 - Warehouse ▼ ➕
Status:	On Hand ▼ ➕
Condition:	New ▼ ➕
Equipment:	None ▼
MAC:	00:04:56:8B:02:D7
IMSI:	
DUID:	Enter the same DUID here
Serial:	
*Cost:	300
Notes:	TAG: 0540

take note of this tag number

Cancel   Save

-We will now go back over to the tab where we are adding the equipment to the customers account and scroll down to the IP Section. You will need to fill in the boxes that are red below as they are filled out below.

     -you will set the Address Range v4 as "cnWave-PlaceHolder-IPv4"
     -You will set the Address Range v6 as "East-SQ_CNwave"
     -You will need to copy the IPv6 Address from Ctools and paste it in the IPv6 Address box. You will need to delete the 1 off the end of the IP that is showing in ctools.
     -example IPv6 address from ctools (2606:ac0:5:b::1),
how you will enter the IP to powercode (2606:ac0:5:b::)

Address Range Filter	No Filter ⌄
Address Range v4	cnWave-PlaceHolder-IPv4 (65166 available) ⌄
IPv4 Address	List Available IPs
Address Range v6	East-SQ_CNwave (65421 available) ⌄
IPv6 Address	Paste the IPv6 address from Ctools and delte the 1 on the end

-Scroll down to the section labeled custom fields and enter the tag number that was mentioned to take note of above.

Custom Fields	
Inventory Number Tag	Enter the Tag number from the inventory page

-scroll down and hit the green button labeled "Save". Make sure the account is active and has a service plan set. Next we will need to build the tunnel.

-Building the tunnel

-you will need to make sure the account is active and has a service plan, next you will use node red to build the tunnel, here is the link.
http://10.4.0.213/ui/#!/0?socketid=eZAG1tJVNcS7YD4IAAAI

- You will need to hit the button labeled "Execute"

15	#1 HH11-DN	gr-2/0/0.14	2606:0ac0:0003:0004::1
16	#1 HH60-DN	gr-2/0/0.15	2606:0b40:0000:0009::1
17	#1 HH61-DN	gr-2/0/0.16	2606:0ac0:0005:000e::1
18	#1 HH67-DN	gr-2/0/0.17	2606:0ac0:0005:000f::1
19	#1 HH20-DN	gr-2/0/0.18	2606:0ac0:0001:0027::1

EXECUTE

Updated
2/24/2022, 11:23:45 AM

-After it runs the script you should now see the customers name and CUID in the list on the left if all steps have been done correctly. You may need to scroll down.
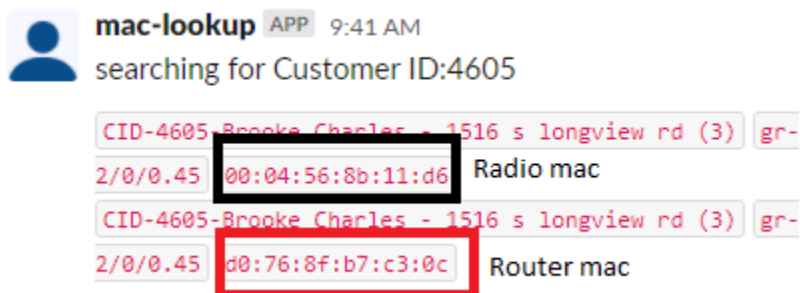
-it will appear like this on the table above the execute button.

| 103 | #5861 Kevin Bishop - 1226 s raintree ... | gr-2/0/0.102 | 2606:0ac0:0004:002a::1 |

-Pulling the router mac and adding to powercode

-To pull a router mac you will need to use Slack, you will go to the general chat and type in the command **/mac-lookup** followed by the CUID from powercode. After the command runs it will spit out a result like below

-use a mac lookup to find the mac that matches the manufacturer of the router if you are unsure of which is which.

mac-lookup APP 9:41 AM
searching for Customer ID:4605

CID-4605-Brooke Charles - 1516 s longview rd (3) gr-2/0/0.45 00:04:56:8b:11:d6 Radio mac

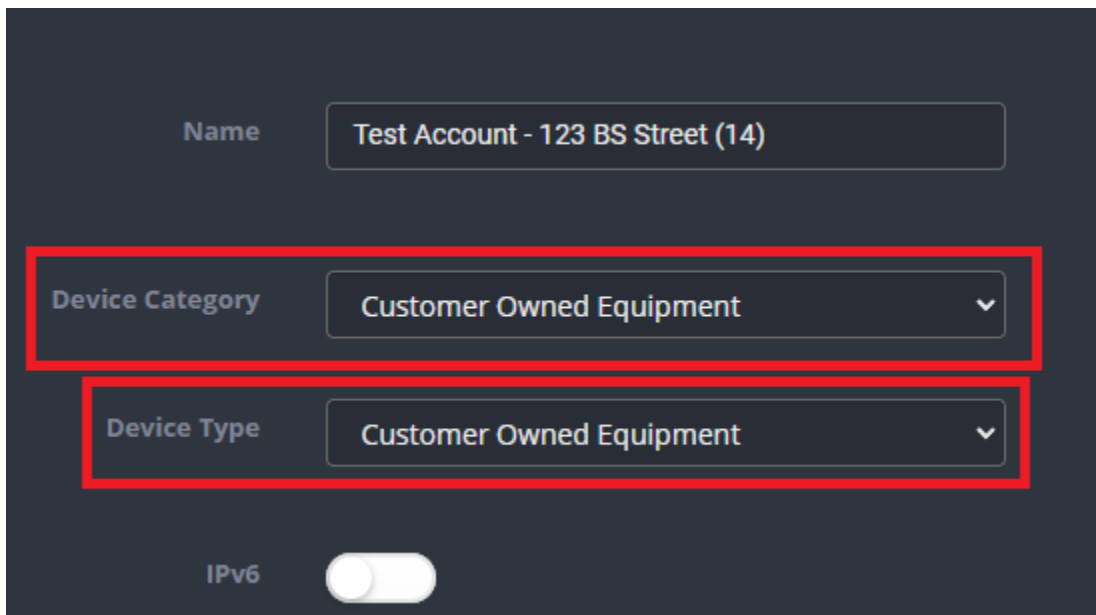CID-4605-Brooke Charles - 1516 s longview rd (3) gr-2/0/0.45 d0:76:8f:b7:c3:0c Router mac

-After you have pulled the mac you will need to add it to powercode -You will then want to open the customers page in powercode and hit the green button labeled "+Add" in the equipment section.
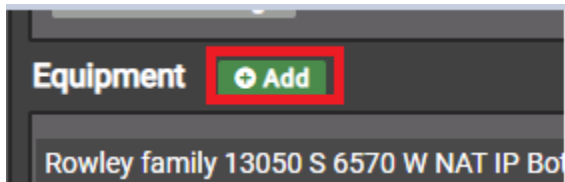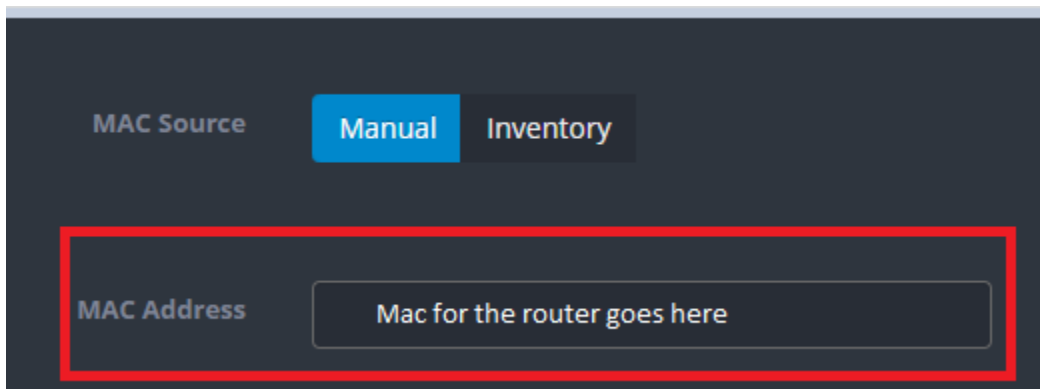

-You will want to navigate to the box titled *Equipment Details* and change the boxes in red to match the picture.

-Device Category for a router will be set as "Customer Owned Equipment"
-Device Type for a router will be set as "Customer Owned Equipment"

-Next we will navigate to the section labeled *Mac Address/DUID*. You will need to add the router mac address from slack to the mac address box that is highlighted below.

-Next we will scroll to the *IP Address* section, you will need to set the IP range as shown below for a router or laptop being used for a bypass.

    -Address Range Filter will not be changed
    -Address Range v4 will need to be set as "CNWAVE NETBLOCK", to give the router a public IP

-After you set the IP you will scroll down to the bottom of the screen and hit the green "Save" button in the bottom right. If done correctly the customer should now have internet on the router or laptop they are bypassing with.

-This is how the equipment should appear in powercode after it has been added.

| Olga Fabian - 1236 Raintree Lane (1) | Cambium cnWave | 00:04:56:8B:09:CA
31:31:58:16:16:81:68:16:81:68:16:81:68:41 | 169.254.1.109
2606:ac0:1:a2e::/64 |
| Olga Fabian - 1236 Raintree Lane (2) | Customer Owned Equipment | 80:CC:9C:B9:C0:73 | 64.32.61.41 |

-Getting radio stats

-You will need to do this through Ctools. You will want to open the device dashboard on ctools
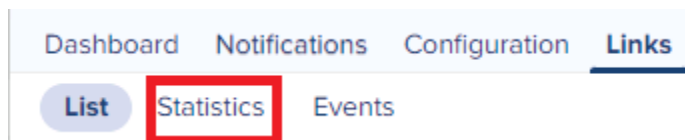
-click the drop down arrow on the left of the site to show the device and then click the device that pops up under the site to get to the dashboard.
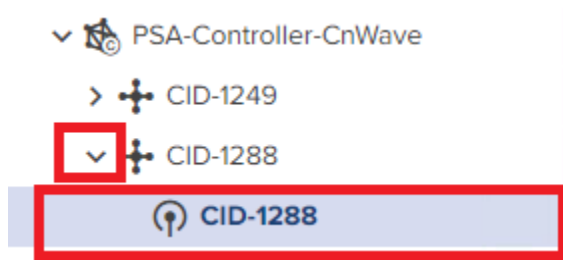
-At the top of the dashboard you will see a list of items click the button labeled "Links"
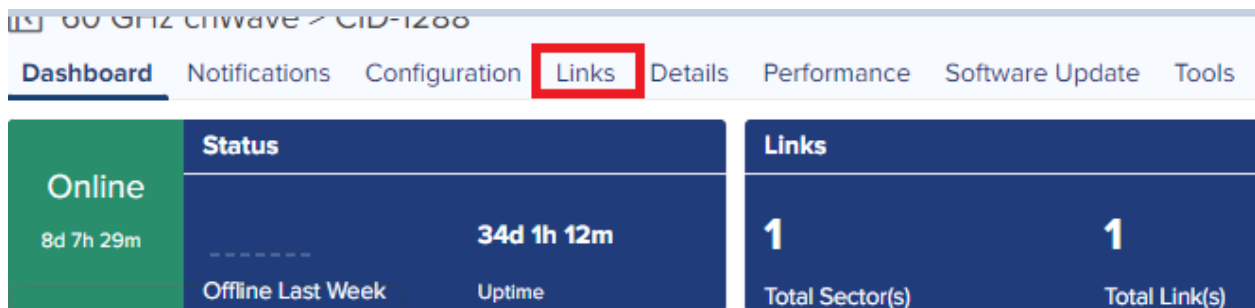
-You will then see a few options pop up below the bar that the "Links" button is on, you will want to select the option labeled "Statistics"

-You will now be on a screen showing the links from the device to the HH and the other direction of the link. You will want to let the installing tech know the actual RSSI and the MCS, and what the target is from Link Planner, steps to get target will be shown next.
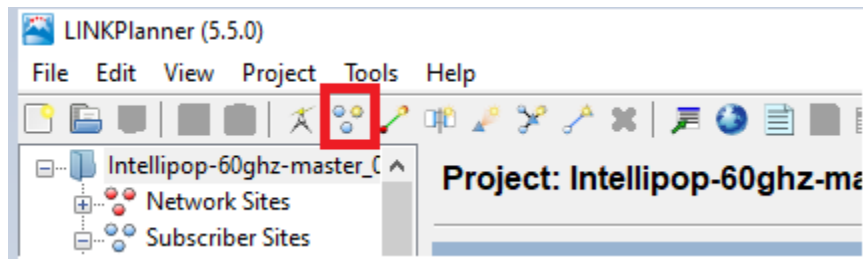
     -RSSI is the singal

Alive ⇌	Link Time	RSSI	Rx SNR	Rx MCS	Tx MCS	T
Yes	8d 7h 38m	-62 dBm	12 dB	11	9	2
Yes	8d 7h 38m	-62 dBm	12 dB	9	11	2

Showing 1 2 Total: 2   10

-Calculating the Target
You will use Link Planner to do this part,
If you need access to the file ask Aaron

-You will open the link planner file and will want to click on the button that is 3 dots that make a triangle on the top bar

-This will pop up a box to add the site to link planner, fill out the boxes highlighted in red below and then hit ok, this will add a pin on the map for this site.
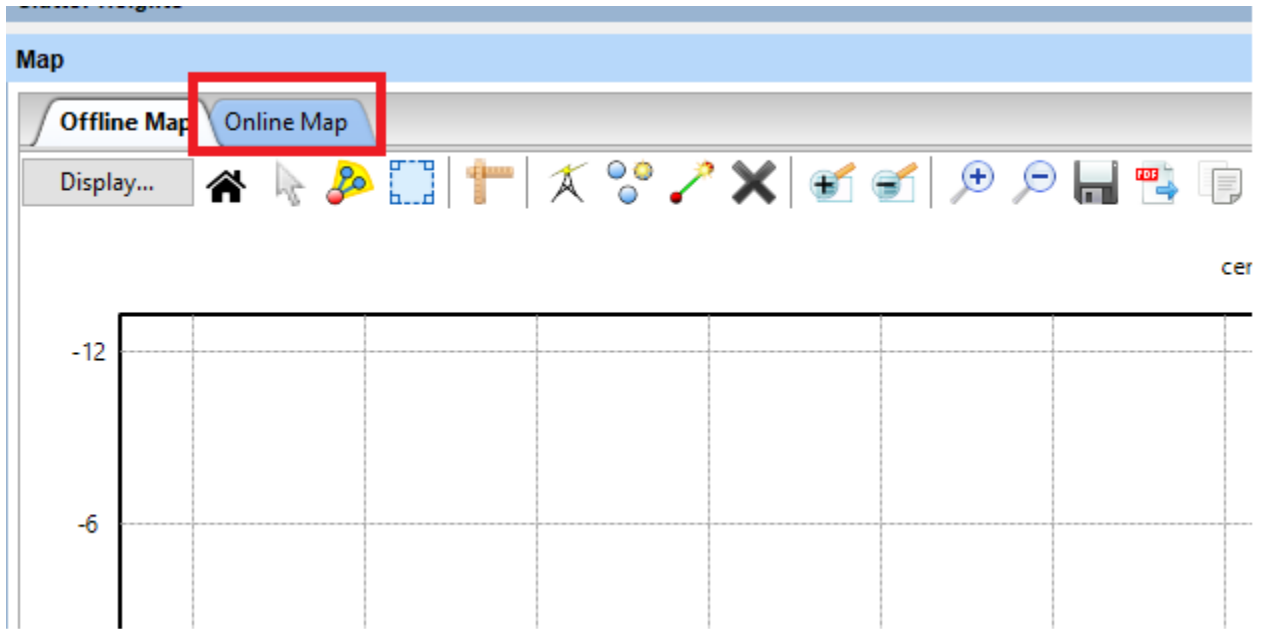
-Name will be "CID-) asterisks will be replaced with the actual CUID
-Latitude will be the latitude of the customers home
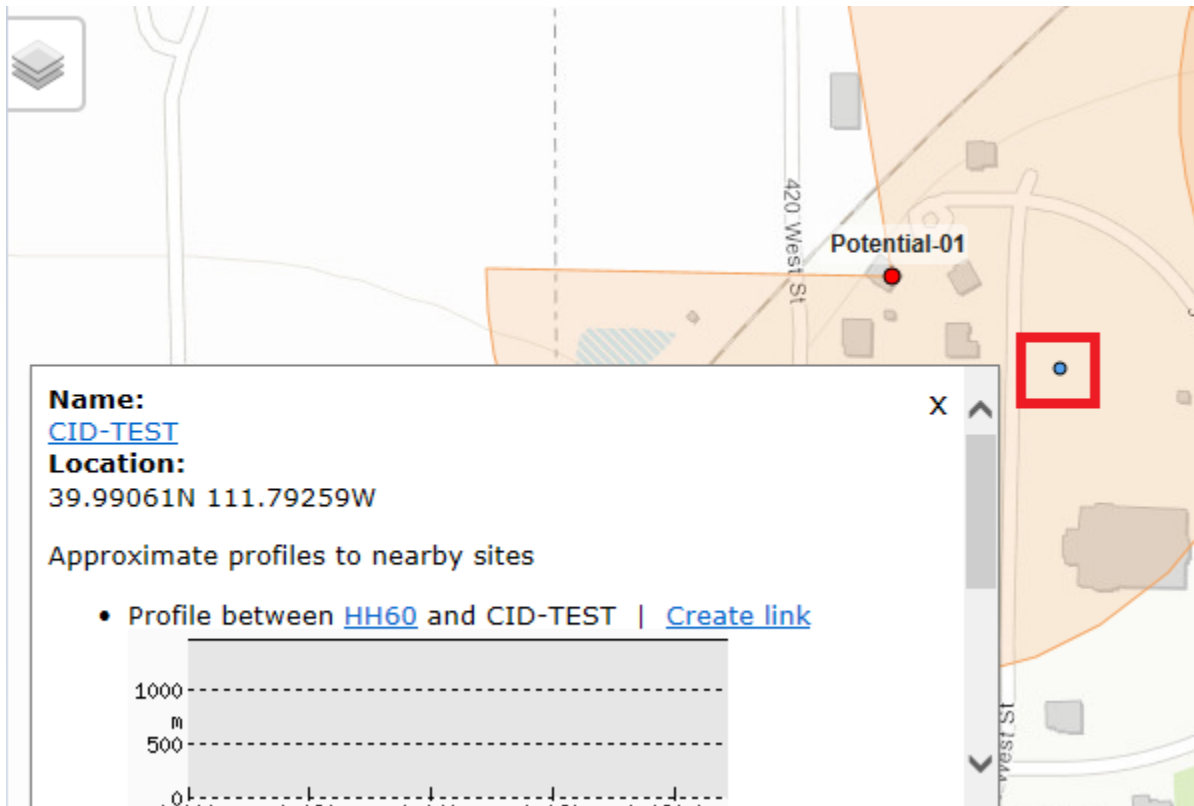-Longitude will be the Longitude of the customers home

-you will then want to select the button labeled "Online Map" to see the full map of the network, you will then want to locate the site you just added on the map

-After the map pops up find the site, left clicking on the blue dots will pop up a window displaying the site name to help you find the one you are looking for
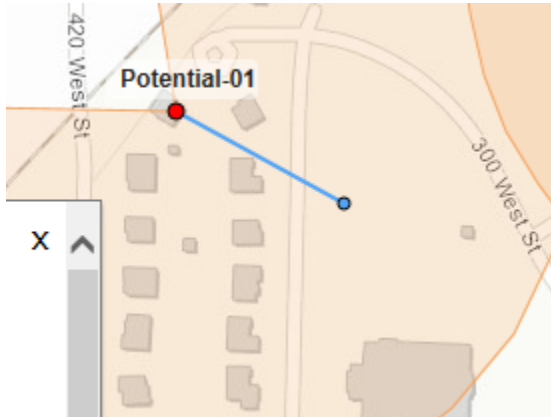
-After locating the site you will right click the site and select the button labeled "Create PMP Link link to here"
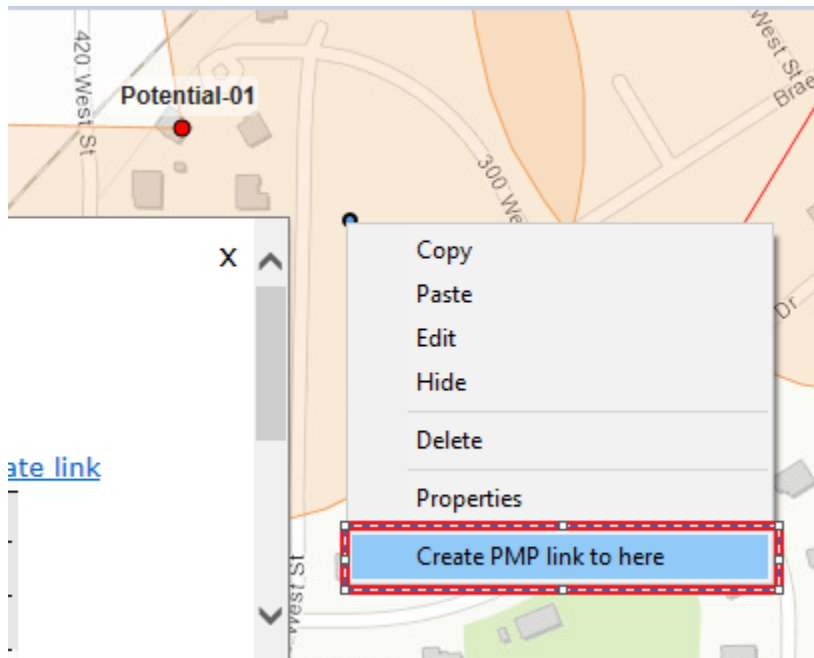

-This will populate a box to select the HH that is in site select the one you are installing on and hit ok

-After you hit ok it will take you back to the map and you will notice a blue line between the site and the HH, left click the blue line, you have to be exact here.

-After clicking the blue line a box will pop up as shown below, click on the text that is shown in the red box below, it may take a moment for the next page to load
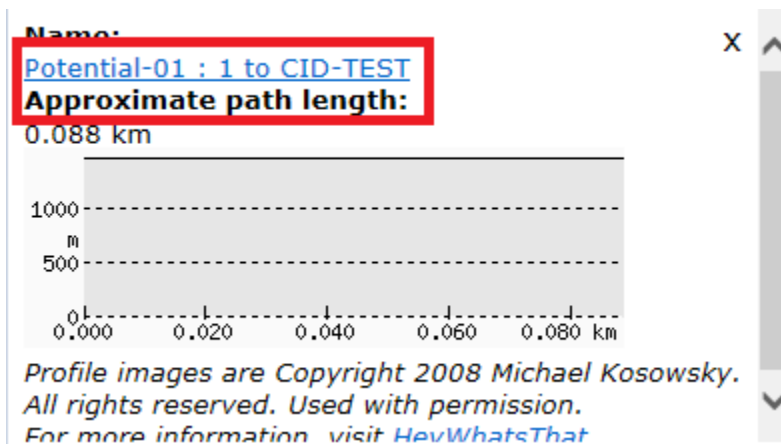
-Scroll down to the section labeled "Performance Summary", should be the 4th box down as you scroll down

-The operational Power is going to be the target. In this test the target is -60 plus or minus 5DB