**How To Download CTT & Lotek Tag Data from Sensorstation v2**

**Using Windows PowerShell OR Mac Terminal**

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**GETTING STARTED:**

Connect an Ethernet cable Cat-6 (with proper usb adapters) to your CTT-Sensorstation on one end, and your laptop (or whichever device you are using) to the other end.

**OPEN TERMINAL or POWERSHELL**

Open Terminal (or synonymously PowerShell for Windows Program) on your laptop.

**LIST DIRECTORY**

It is important to check which directories you are currently in, and understand how to move and change directories in Terminal

Check file organization by typing:   
“ls” in Terminal #”ls”=list. It will list the sub-directories that stem from the directory you currently are in.

**DIRECTORY CHANGES**

Then according to what you find in the list of directories, change the directory to where you want to put your data. Type:

“cd Downloads” if you want to put your data in the Downloads folder #cd stands for “change directory”

If you want to go up a directory, then type “cd ..” #It moves you up one directory.

Example:

wblake@MPG-WilliamBlake ~ % cd Downloads

wblake@MPG-WilliamBlake Downloads % cd ..

wblake@MPG-WilliamBlake ~ % cd ..

wblake@MPG-WilliamBlake /Users % cd ..

wblake@MPG-WilliamBlake / %

For me, I have to type: “cd /Users/wblake/Downloads” #To go to my directory that corresponds to my Downdloads folder.

**MAKE DIRECTORY FOR CTT\_SS**

You’ll want to create a folder with your CTT-Sensorstation ID which will be found in three places: 1) when you log into the CTT Interface, 2) if you check the Motus website, or 3) look on the bottom left corner of your Motus CTT computer for the CTT ID label.

In my case, my CTT ID is “CTT-2EE41E27E49C” and I will need to create a folder called “2EE41E27E49C”.

This folder will live in my Downloads folder. In order to create this folder, type in your Terminal, under the correct (Downloads) directory: “mkdir 2EE41E27E49C”#mkdir=”make directory folder”.

Example of making a directory within my Downloads:

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**ALREADY EXISTING DIRECTORY**

If you already have previously created your sensorstation ID directory (from the steps above) and if you already had uploaded data to that folder (in my case it is named “2EE41E27E49C”), then simply change the directory without making it.   
For instance, with CTT-2EE41E27E49C, type: “cd 2EE41E27E49C”

Example:

wblake@MPG-WilliamBlake Downloads % cd 2EE41E27E49C

wblake@MPG-WilliamBlake 2EE41E27E49C %

**PING**

(Optional) Before you connect and start to download data, make sure that you are actually connected to your sensorstation. Type the following: “ping sensorstation.local”

If the terminal continues to run for ever and it says “Requested time out…”, then press on your keyboard the ”Control+Z” buttons to stop this operation.

If Sensorstation is not responding, go ahead to manually turn it off and then back on, and try the “ping” command one more time as explained above.

When you are finally connected (the Requested time out message is gone), you can go to the **SUDO** step.

You may need to hit ‘Control+Z ‘ command to stop the pinging.

If for some reason you get the “Requested time out” message, even after restarting your sensorstation, then you may need to enter the IP address instead of the Sensorstation ID.

**CHECK IP ADDRESS**

To check the IP address of your CTT-Sensorstation, go to the CTT-Sensorstation green LCD screen and use the up/down/back/select buttons to navigate to “Network>IP Address”.

*My Sensorstation wasn’t connecting due to a glitch or an ongoing reboot. I’ve found that sometimes when I press one of the sensorstation buttons (upd/down/back/select), I will get a little static zapping on my finger tip and this will cause the sensorstation to stop working and the LCD screen can go blank.*

**SUDO UPLOAD**

Now that you know you are connected, and you have all the directories properly checked and everything is good to go, you will start the upload process for that station data, using the command “sudo”.

Sudo= “Superuser Do” It’s an override command.

Type in the sudo command in the Terminal: “sudo scp -v -r pi@sensorstation.local:/data .”

***Password 1:*** *It will ask for the Administrative Password (the one you use to log in to your laptop). If your laptop requires you to gain administrator clearance (like my MPG laptop), then request Administrative privileges before you type in your login password in Terminal.*

***Password 2:*** After the first password, then it will ask for the CTT Sensorstation password.

This second password is either: “raspberry” (for older CTT Sensorstations) or “ctt-sensor” for new CTT-Sensorstations.

SUDO command will re-write over whatever was in the existing folder “2EE41E27E49C “, with a brand new “data” folder. So make sure you have uploaded this data folder already to Motus (steps explained below), or rename the previously existing “data” folder to something unique, such as adding the date to the name: “data020222”.

The SUDO command uploads ALL the data that was on the CTT Sensorstation. Because of this you either want to use the “rsync” command or delete all sensorstation data after you download it, to start on a clean slate. See options 1 or 2 below:

**Option 1: ERASE DATA \*\*preferred\*\***

To not upload redundant Motus data to the server next time you connect to your CTT-Sensorstation:

* Wait for the SUDO operation to end.
* Check your downloaded “data” folder on your laptop, to make sure there’s data in it before you erase the data on the Sensorstation.
* Go to the CTT interface, by typing in your local web-browser search bar: “sensorstation.local”
* Scroll to the bottom of the CTT Interface and delete all CTT and SG files (red buttons that say DELETE Data Already Uploaded on them). Example:

Graphical user interface, text, website

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**Option 2: RSYNC Command**

There is a command called “rsync” that looks for existing data so it does not upload existing data already on your laptop.

It’s basically a file transfer program that will look at the source folder and the folder you are taking to copy, but in a way that will ensure there isn’t a copy of already existing data on your laptop.

To run this command, type in Terminal:

“sudo rsync -avh -e ssh pi@sensorstation.local:/data .” #This will compute this rsync command that will look through all your files in the ctt-sensorstation. It’s going to say everything is up to date or it will upload data that wasn’t downloaded yet. You’ll get a message like this example:

sent 2.68M bytes received 6.32M bytes 69.48K bytes/sec

total size is 105.78M speedup is 11.76

wblake@MPG-WilliamBlake 2EE41E27E49C %

Now, it will still be complicated to decide which files you want to upload to the Motus website, because you will have all your CTT Sensorstation data on your laptop (old ones and new ones), and you don’t want to send data that was already sent.

So this technique is not preferred, and it’s better to just upload an entire data folder from your CTT Sensorstation and follow the steps of **Option 1**.

**RENAME**

In any case perhaps change the “data” folder name so you can add the current date of upload in case you want to keep track of your folders. Example: “data\_020222”.

**ZIP or COMPRESS**

To prep your folder before you submit the data to Motus, first zip (PC) or compress (Mac) your “data\_020222” folder, by right-clicking on the folder name and clicking “compress” or “zip”

**MOTUS UPLOAD**

* Go to [www.motus.org](http://www.motus.org)
* Log in to your account
* If you are on multiple Motus Project ID, make sure you select the correct project.
* Go to Manage Data>Upload Detection Files.
* Choose your zipped (or compressed) file in your local directory.
* Click on “Verify file” on the Motus website
* Then when finished, click on “Upload file for processing”
* When complete, you can click on “Refresh jobs list” and your upload should show up on top of the table.
* You can exit the website, your upload is complete.

**CHECK DATA**

There are many ways to check and also analyze data (which I won’t go into here).

However, you should be receiving an email confirmation that the download was successful (unless you opted out of this feature). You should verify there are no errors in the email message and click on the links to ensure you downloaded data without errors and have some had tag detections uploaded to the Motus database. It might take 24 hours for the email links to work well.

Within a few hours (or days) go back to the Motus website, scroll down to the Receiver Map, and click on your station. The “last data received” should specify the date at which you uploaded data (i.e., 02/02/2022). If so, you are done.

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**Uploading data directly from the CTT Interface:**

The Terminal/PowerShell data uploading technique is the most efficient for large data dumps.

There is an option however, to upload the CTT data and the Lotek data directly on the CTT Interface, although I haven’t confirmed it works well. When I’ve tried, it took forever to upload, and I was sure that all tag data had been uploaded…

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Anwyays, in the CTT Tag Data and also in the Nanotag Data of the Data Management interface, click on “Download Data Not Uploaded”. You will have two folders with lots of subfolders.

Combine these folders into one.

It does not matter how the subfolders are organized within the single resulting folder because, when you send data to Motus, it is able to differentiate within folders are CTT data and which ones are SG (Lotek Nanotag) data.

In case you uploaded data this way, without using the Terminal/PowerShell technique, it would not matter how you combine the CTT data folder with the SG data folder, but make sure you “zip” or “compress” this folder before uploading to Motus website (see similar steps above).