

# Crypto Mining Guide



**Crypto Mining Guide - Expert**

# **Expansion**

**By Stephen Wealthy**



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## Introduction

One of the best investments I've made has been building crypto mining rigs. What started out as a proof of concept has turned into a terrific source of passive income.

My first [crypto mining guide for beginners](#) taught how you could take a simple gaming PC and start mining cryptocurrency with it. This helps you prove the concept works, at low to no cost.

My [second guide taught](#) you how to build a small rig with 2-3 GPU's as you expand off the gaming PC and get using professional grade mining rigs.

**This guide teaches** you how to expand that current rig so you can keep scaling up your operation and increase your passive income.

This guide aims to teach you 4 topics

- Add another GPU to your rig
- Replace and upgrade your power supply
- Mine two coins at the same time from one rig
- Add a second power supply to your rig for even more GPUs

If you have any questions please reach out to me on [Twitter @StephenWealthy\\_](#) or in our [Zzz Money Club discord group](#) and I would be happy to help you.

Nothing is more freeing, and inspiring than building your own financial freedom. These guides are only meant to give you a kick start.

Then you finish it off.

Regards,



Stephen Wealthy



## Parts & Requirements

This guide is written with the assumption that you have read or followed my previous guides

[Beginners – Crypto Mining: How to get started with a gaming PC](#)

[Advanced – Complete Guide for Building a Mining Rig](#)

This guide is meant to help you expand your mining operation and add more GPU's to a rig. After this, it is a matter of rinse and repeat until you have your passive income goal met.

Here is the rig we will be expanding on today:



This is a 6 GPU **frame** but only has 3 GPUs installed. It is lonely. Also note it only has one power supply capable of 750w. On top of this, it only has 3 PCI Express power cable strands.

**I only use PCI Express cables to power my GPUs and risers** so to add more GPUs to this rig I need to replace this power supply with one that has at least 4 cables.

I will replace this one and show you how I do it.

Then I will add the new GPU.





Here are all the parts we will need to expand this mining rig

1. GPU: EVGA 3070 Ti FTW 3
2. Power Supply: Power Supply 1000w P5
3. GPU Riser and Splitter Cable: from [GPURisers.com](https://www.gpurisers.com)

Why do we need these parts?

### 1. The GPU –

This runs the algorithm to mine the coin.

Graphics processing units are incredible machines that execute math problems.

NVIDIA GeForce RTX 3070 Ti						
GA104 GRAPHICS PROCESSOR	6144 CORES	192 TMUS	96 ROPS	8 GB MEMORY SIZE	GDDR6X MEMORY TYPE	256 bit BUS WIDTH

This GPU has 6144 separate processing cores!

While they are not complex like a CPU core, they are enough to process Ethereum, Ravencoin, Flux, and other GPU Mineable coins.

### 2. Power Supply –

We need enough power to supply the motherboard, and 4 GPUs. 1000w will be enough and I love the platinum efficiency rating. This means we will be pulling 92%+ efficiency off the wall. So, if our machine needs 500 watts, it will pull 543 off the wall.

Always keep in mind the power supply will only provide what is needed to run the machine. This means if you have a 1300w power supply and only 500w is needed, then only 500 watts will be supplied.



### 3. GPU Riser and Splitter Cable

We need a GPU riser to connect the GPU into the motherboard. This solves the space problem and allows better breathing and cooling of the system.

The splitter cable allows us to split the end of one PCI Express 8pin plug so we can properly power the GPU and riser. I'll show you how we use that.

## Replacing the Power Supply

**Please be sure the rig is powered off and completely disconnected from the wall before continuing**

First step is we disconnect the old power supply from the motherboard, CPU, fans, and all GPUs.

Remove all the connections by carefully unplugging them.

Afer you have disconnected the plugs, remove the power supply from the frame.

Here is that same rig without the power supply:



She looks naked - time to cable up the new power supply





## Cables We Need



#	Cable	Description
1	CPU Cable	This powers the CPU and the CPU Fan
2	Molex Cable	This gives the motherboard extra power and also powers the fans
3	PCI Express Cable 1 x 8 Pin	<b>Used to power a GPU</b> Although it only has one end, I can use a splitter and safely power my GTX 1060 which only needs 75w
4	PCI Express Cable 2 x 8 Pin	<b>Used to power a GPU</b> This cable can safely power any of the GPUs I will add a splitter to ONE of the ends
5	PCI Express Cable 2 x 8 Pin	<b>Used to power a GPU</b> This cable can safely power any of the GPUs I will add a splitter to ONE of the ends
6	PCI Express Cable 2 x 8 Pin	<b>Used to power a GPU</b> This cable can safely power any of the GPUs I will add a splitter to ONE of the ends
7	WTF is this	I blame my dog – don't know what this pink thing is.

**Note:** I do not use any SATA connections

Also, I didn't show the 24 Pin motherboard connector. This is self-evident and must be included no matter what.



This is the back of the power supply where we will plug all our cables into.

We only plug the cables we need into the power supply.

Let's go ahead and plug those cables into the back: click, click, click.



#### Couple of important points:

- Only plug the cables into the correct slots
- Do not use cables from other power supplies
- Do not put VGA (PCIE Cables) into the CPU slot or vice versa
- Do not power GPUs with CPU cables

We want this mining 24x7 for years, so we want everything in spec. On certain things we need to respect the manufacturers specification, and this is one area we need to hold to.

Right plugs in the right slots, for the right parts. **ANY** questions, please reach out to me on Twitter, or my discord group.





Now we install the power supply in the mining rig

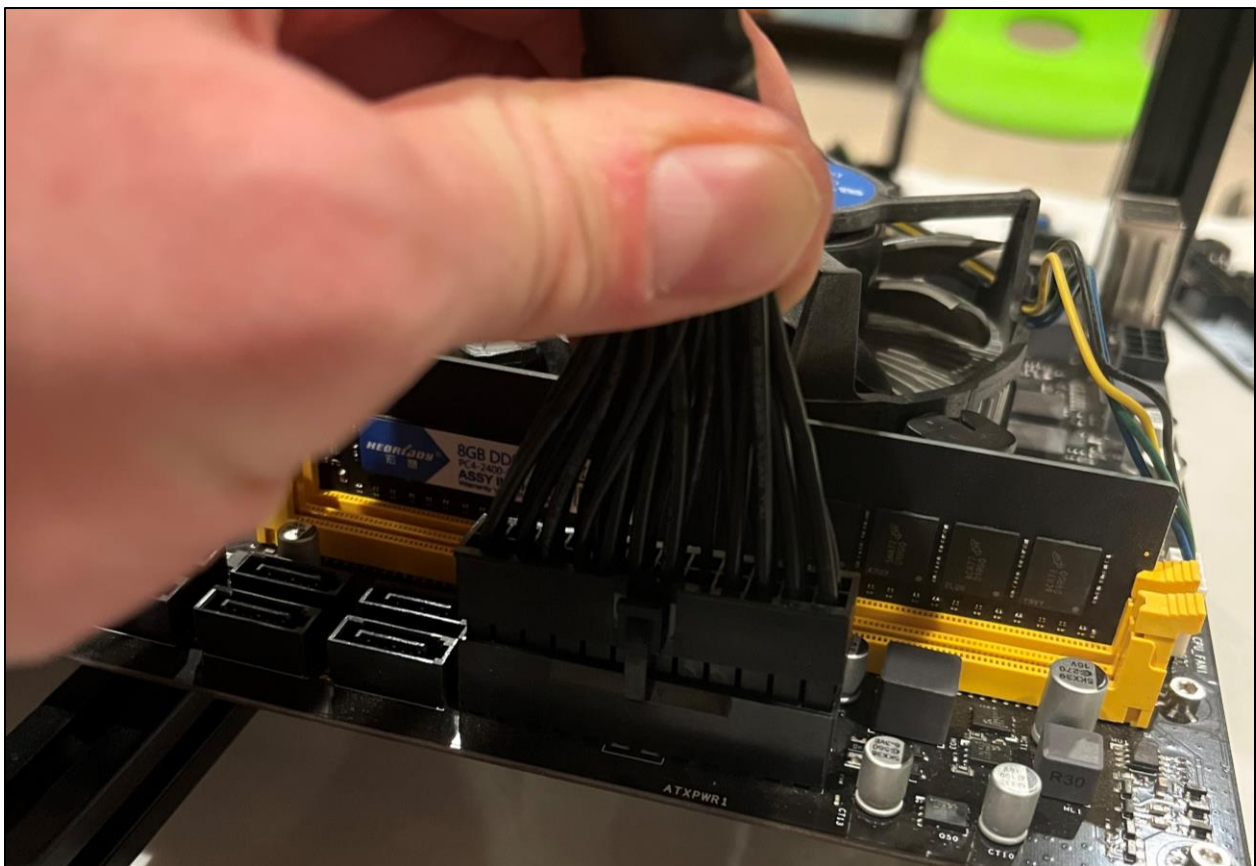


Place it and screw it into place so its tight

Notice how all the cables are out the back

Now let's begin connecting it to the motherboard all while keeping the unit **unplugged from the wall**

### Connect Motherboard 24 Pin Cable



Connect the 24-pin motherboard cable first.

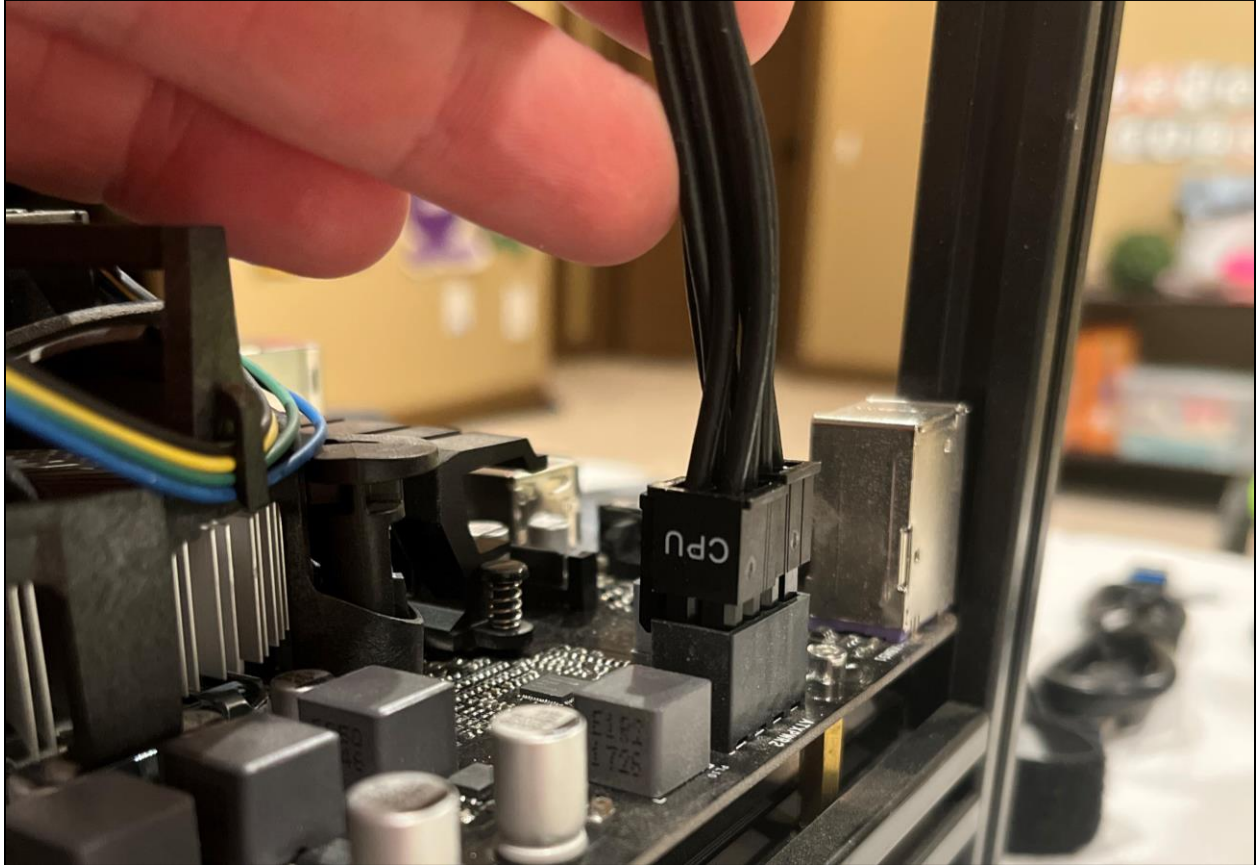
You may need to put your other hand underneath to keep the board from bending. There is only one way to insert the cable, so if it doesn't initially slide in easy, it may be backwards.

Make sure it is snug and securely connected.



## Connect CPU Cable

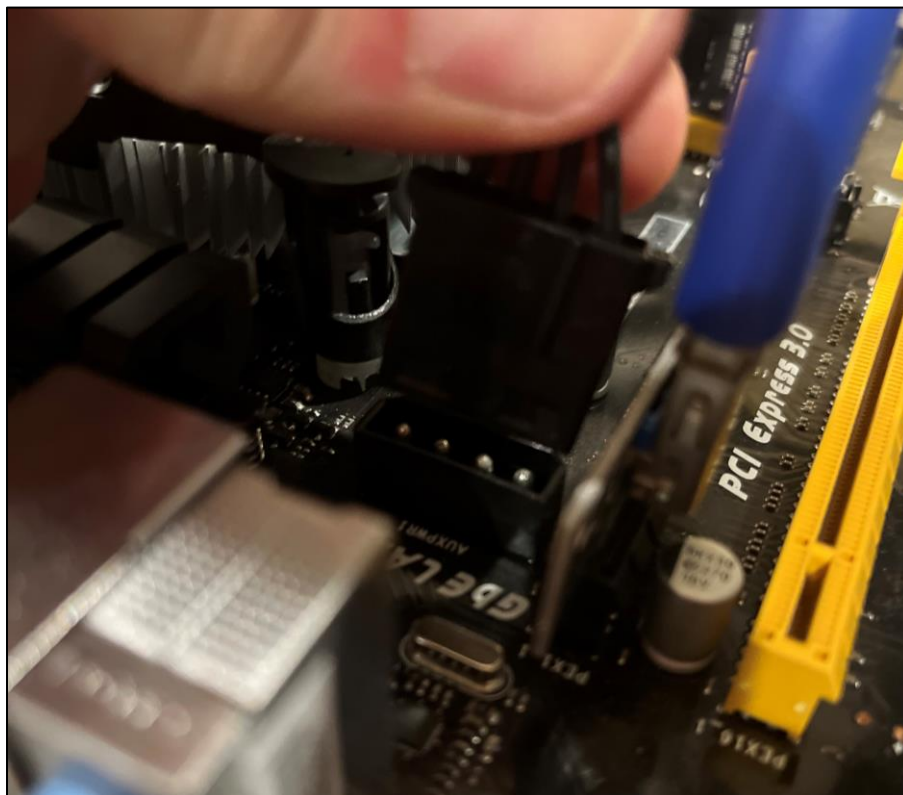
Next, we connect the CPU cable



Again, only one way to insert the cable, nice and snug until it clicks into place.

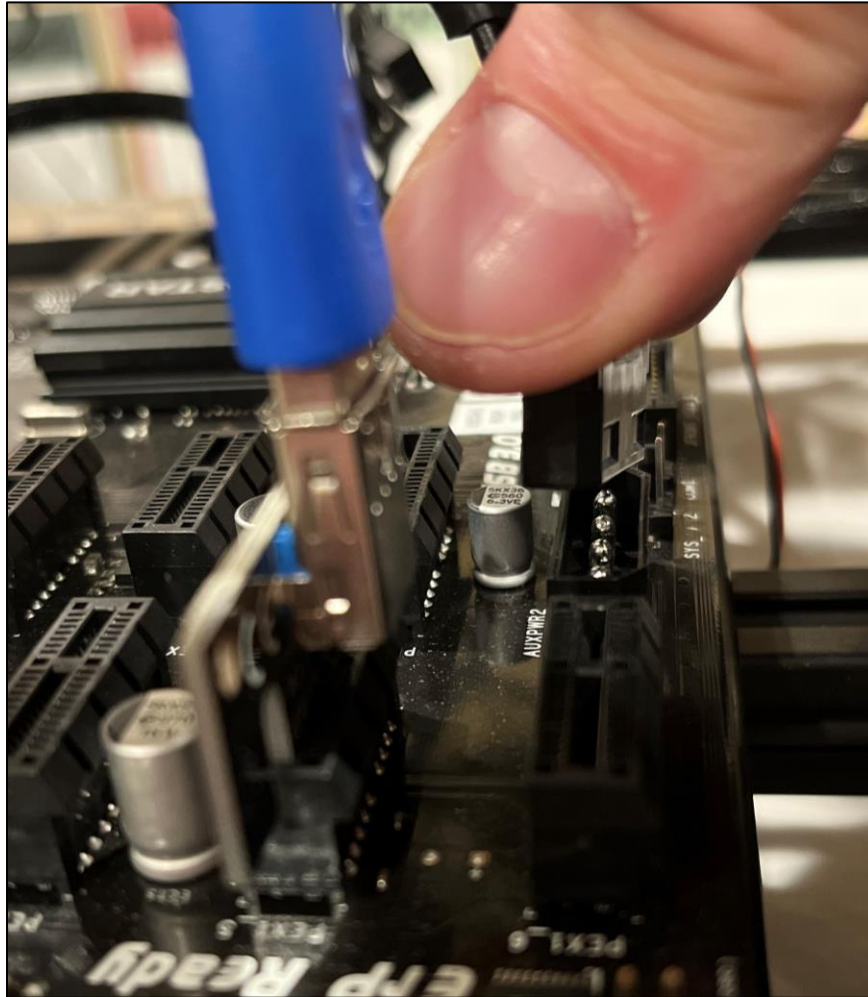
## Connect Extra Power Cables for Motherboard

Next, we plug in the additional power cables for the motherboard if your system requires it.



Mine has **TWO**





That is the second one

I'm okay if these are on the same Molex chain or cable, they don't draw a lot of power and are just to provide some extra stability to the motherboard.

Some motherboards will have none, some will have SATA power. Follow the directions and specifications for your motherboard.

### Connect the System Fans

Last, before we get to the real fun stuff, we need to connect the system fans to the Molex connector.

These are all daisy chained together, and that's just fine.







## Installing the new GPU

Let's open the box

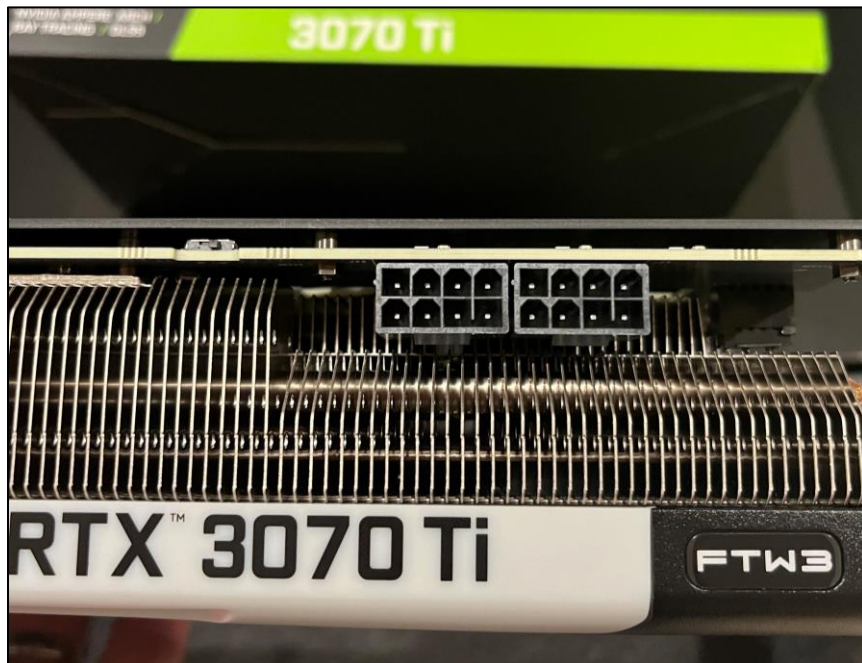
If you've been following me on Twitter or on our [Zzz Money Club discord group](#), you know I love EVGA GPU's.

You can imagine the smile on my face when I open this box of passive income.

These are my absolute favorite and I got this for \$829.99 USD off the EVGA official website.

This is a terrific GPU which will make between \$1.53 to \$1.93 a day profit given current crypto prices as of Feb 20, 2022. So, this will have a payback period of just over a year, less if crypto prices go up.





One of the first things I do after opening the box and inspecting the GPU is look at the power connectors. This GPU will require 2 x 8 Pin power connectors. We will use splitters to plug into these and power the GPU.

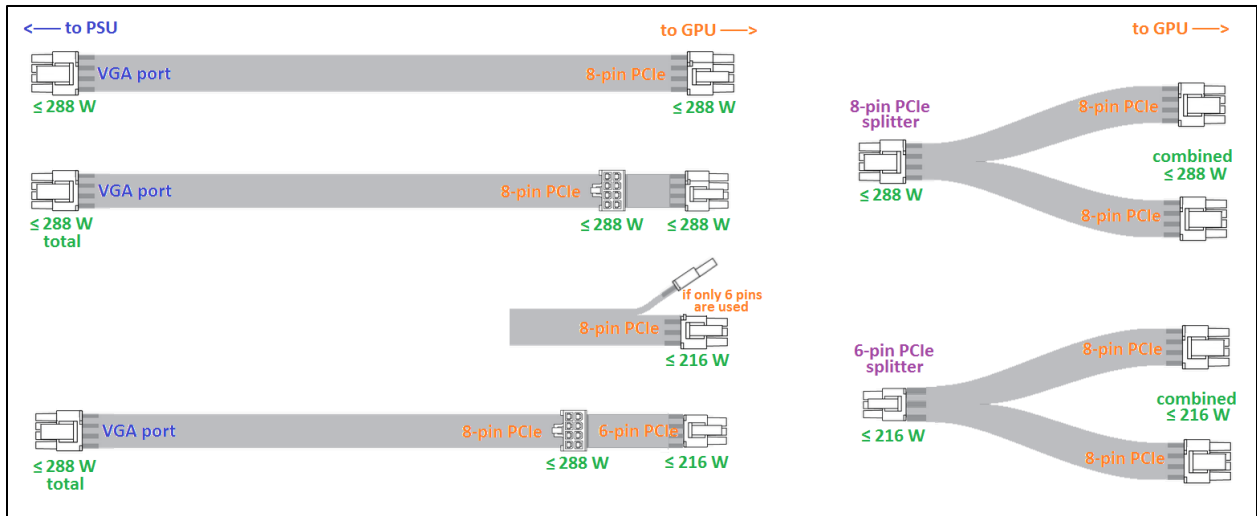
While the GPU is theoretically capable of pulling 325 watts, we will use overlocks to get this number down to 190w to 250w.

This means we can safely power the GPU off one PCI Express power cable because a complete cable can handle 288w.

If your GPU is going to pull more than 288w then you will need more than one PCI Express cable.

This is very important in the case of the RTX 3090 which can easily pull 300 or more watts.

This graphic helps to illustrate the power limits

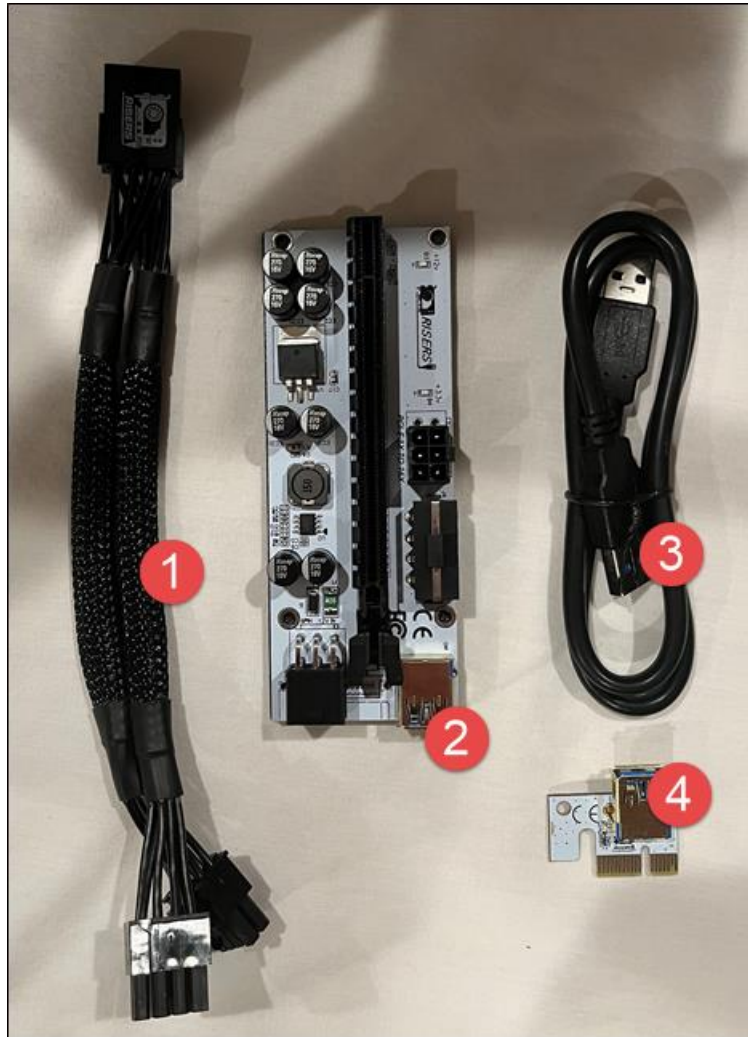




## Unpack the Riser & Splitter

Next let's open the GPU Riser package

We use these so we can connect the 4 GPUs to the motherboard and run a mining rig







#	Item	Description
1	Splitter (8 Pin to 2 x 8 Pin)	This cable allows us to split the end of the power cable and we use this to power the GPU
2	Riser Board	This connects to the GPU directly
3	USB Cable	This cable connects the riser board and the PCI x1 connector
4	PCI x1 Connector	This is the actual connector that goes into the motherboard





## Connect the GPU to the Riser Board

Connect and install the riser




<p>1-Connect the GPU to the Riser</p> <p>2-Place the GPU in the frame – bolt it in place</p>	<p>3-Connect the PCI x1 Connector to the USB</p>	<p>4-Connect the other end of the USB to the Riser</p>	<p>5-Connect the PCI x1 Connector to the board</p>
			

## Plug in the Splitter

Next, we plug the splitter into the top of the GPU.

The plugs are fool-proof so there is only one way to plug them into the GPU.

Make sure they are in snug and click into place.

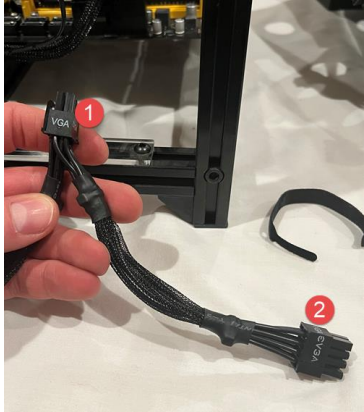


<p>Take the splitter</p>	<p>Plug the two male ends into the GPU</p>	<p>It will look like this after</p>
		



## Connect Riser and Splitter to Power

Next, connect both the riser and the splitter to the PCI Express power cable

Again, the power supply is still disconnected from the wall, so we have no chance of sending live power to the GPU while we do this

<p>This is the end of PCI E Cable from the power supply</p> <p>#1 goes into the Riser #2 goes into the Splitter</p>	<p>Connect #1 into the riser board Push it in nice and snug until it clicks</p> <p>#2 is the USB cable that we connected in an earlier step and is only noted for reference</p>	<p>Connect the other end of the power cable into the splitter.</p> <p>This is end #2 we noted in the first image</p>
		





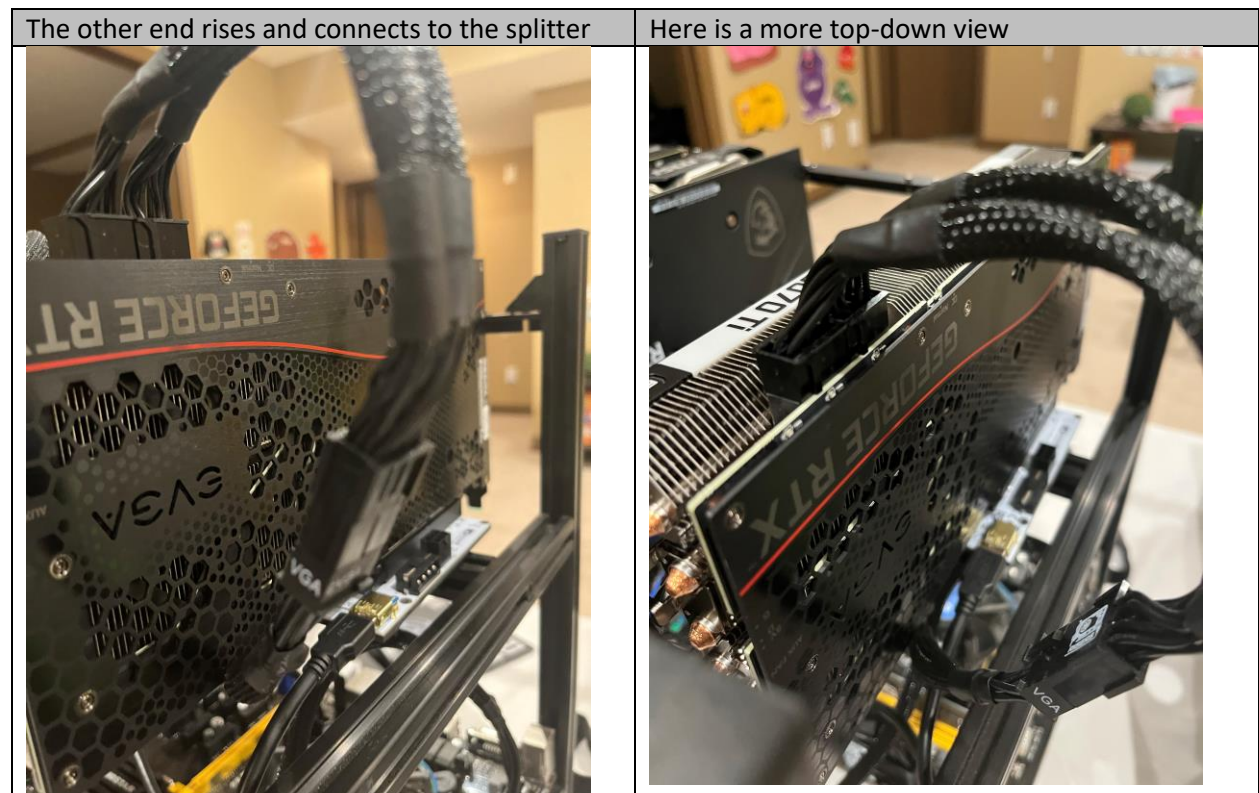
## Connection Inspection

Now step back and compare your connection to what I have here in the following 4 photos.

I've tried to keep these as large and high resolution as possible so you can see what I've done.

This is how to safely power a GPU.

I will not accept any other wiring options because this is going to run 24x7 for years and I know this setup works

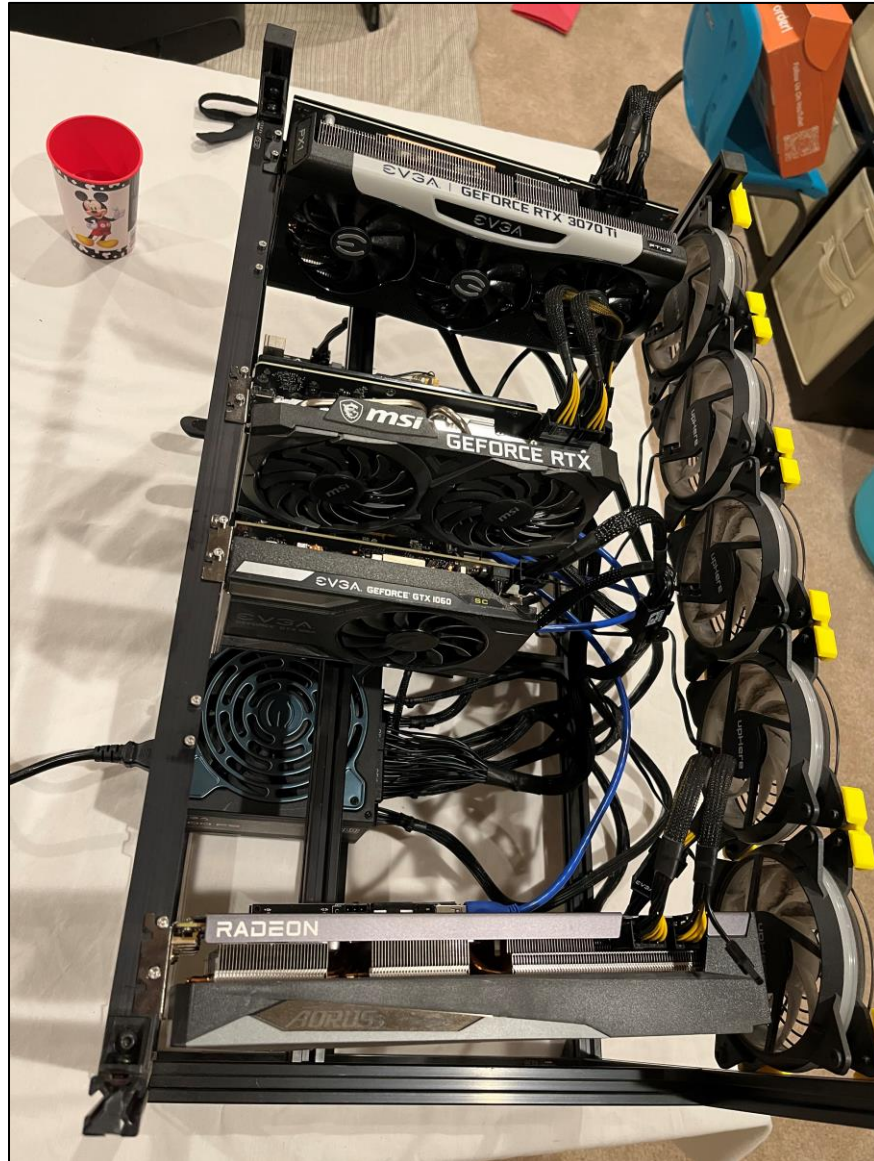






## Build completed

At this point we are done the physical build. Let's look at what we have so far



### My kids photo bombing their mickey mouse cup in - so embarrassing

You will notice the spacing for the 4 GPUs in a 6 GPU mining frame. I put the two hottest GPUS on the outside and the two coolest ones tight together.

This is done to improve airflow through the rig. When I get 2 more GPUs, I will have to rethink the positioning. But always think about airflow and how best to keep the system cool.



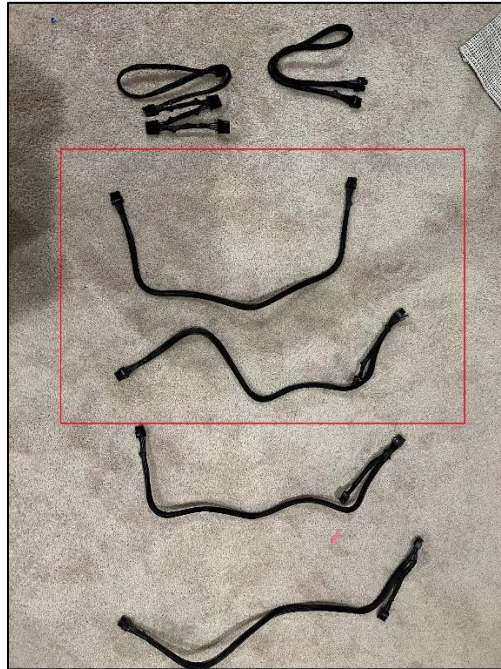
## Wiring for a 3 X 8 Pin GPU

**If your GPU only has 2 X 8 Pin or less, you can skip this section**

A question that I'm getting more frequently as the GPUs get more powerful: "How do you properly wire a 3 X 8 pin GPU?"

This is a great question and you do need to be careful that this is done correctly.

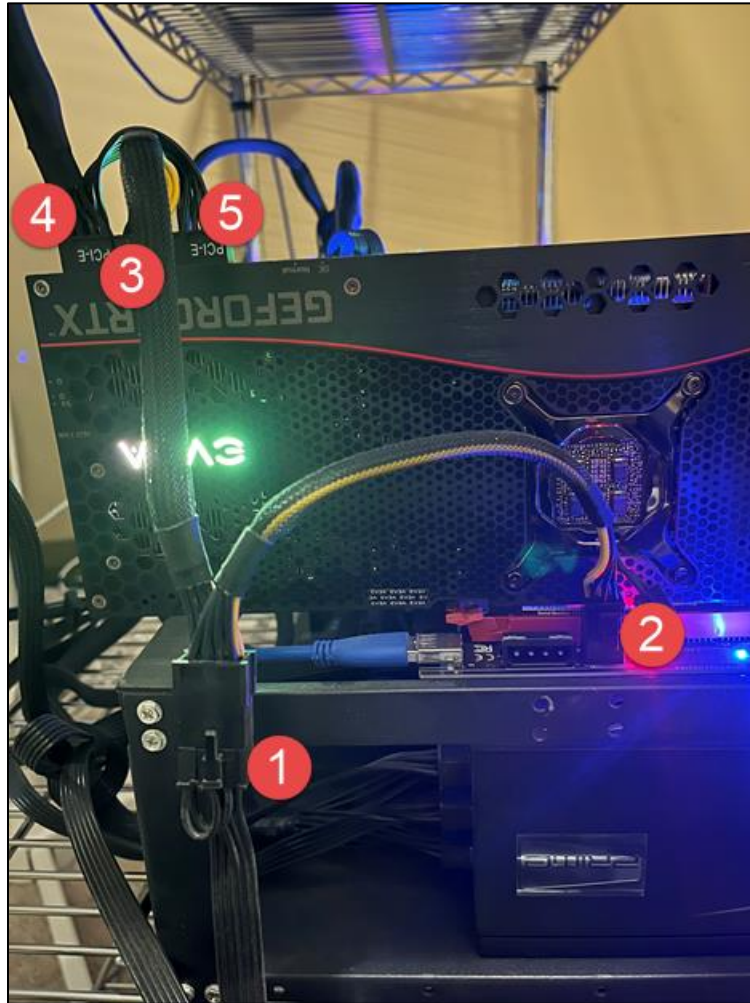
The answer is you need 2 strands of PCI Express cables because these GPUs can pull over 288 watts which is more than one strand can supply.



The good news is we just need one 1x 8pin and one 2x 8pin PCI Express cables and **one splitter**.



Here is how they look once we wire the GPU



#	Item	Description
1	End of the 1 x 8 Pin	This connects to the splitter
2	Power Riser	One end of the splitter powers the riser
3	Power Middle GPU 8 Pin	The other end of the splitter powers the middle 8 pin plug on the GPU
4	Power Outside GPU 8 Pin	One end of the other PCI Express Cable goes in the outside
5	Power Inside GPU 8 Pin	The other end of the other PCI Express Cable goes in the outside

If you have any questions please reach out to me on [Twitter](#) or in our [Zzz Money Club discord group](#) and I would be happy to help you.

Wiring a 3 x 8 Pin GPU is an advanced install and needs some careful consideration. Especially if you're installing multiples side by side. Please reach out to me.





## First Power Up

Next, before we turn the power on, take a minute to ensure all the cables are snug, clicked in place and double check the previous GPUs. It's possible something came loose during the build or moving the GPUs. I find the x1 PCI Express connectors will come out. So, I always double check those.

Because this is a simple expansion of an existing system, we don't need to adjust BIOS settings. We simply turn it on.

After you've checked all the plugs, connect the power to the wall, put in the ethernet cable, and turn on the machine.

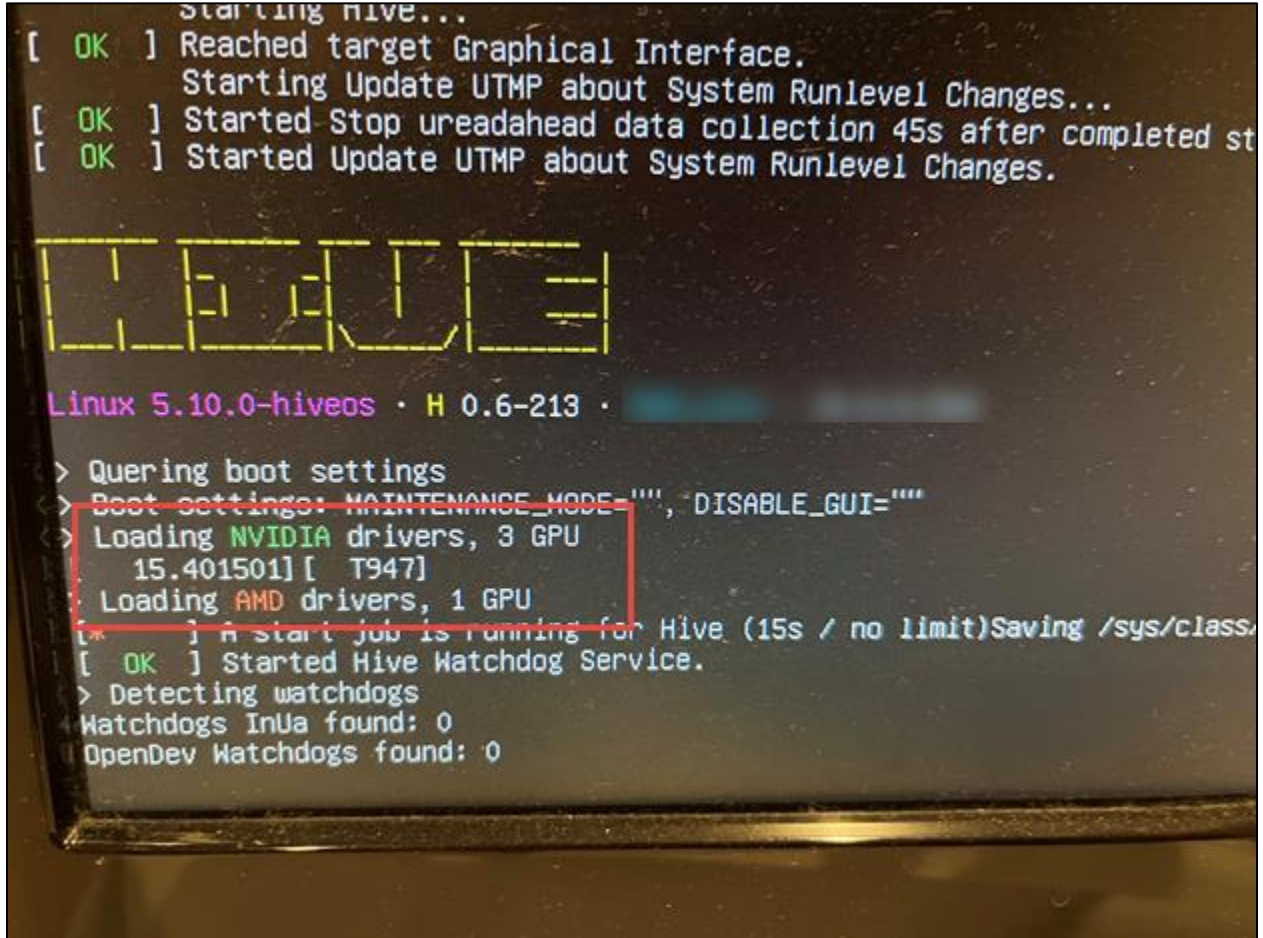


As it is turning on, quickly check that all the riser boards light up, all the GPUs spin and the CPU fan is going.

There it is turned, first try, no problems.



Now, watch the boot sequence on your monitor



As the system boots, we want to look for this GPU Count

I have 4 GPUs in the system:

- Nvidia 1060
- Nvidia 3070
- Nvidia 3070 Ti
- AMD 6700 XT

Everything looks good to go and the system is recognizing the GPUs

### First thing at Command prompt

The first thing you do once you hit the command prompt is type

**miner stop**

This stops the miner so we can ensure we properly apply the overlocks to the GPUs

On a laptop, we go open HiveOS and open the Mining Rig

Here is that mining rig setup for mining Ethereum



We want to make sure the overlocks are properly applied to all the GPUs. Because when we add GPUs to a mining rig, things shift around, and we could be applying the wrong clock settings to the wrong card.



So double check your clocks and apply new clock settings for your new GPU

If you're adding a new Nvidia GPU set these for your new clocks to start, and then fine tune them through trial and error.

**Core:** -200

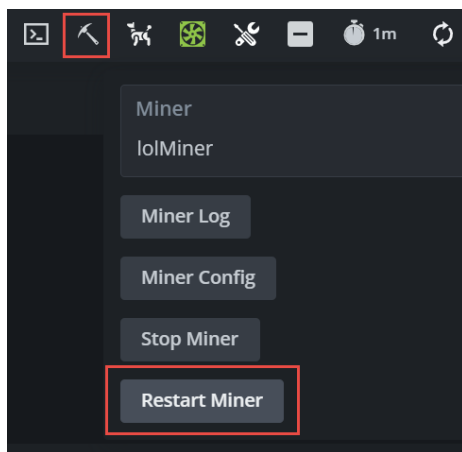
**Memory:** 2200

**Power Limit:** 65% of the normal power settings

What are your normal power settings? If you look up in the graphic above it says the minimum power is 100, normal is 310 and maximum is 325.

Once you have applied the appropriate clock settings, you want to restart the miner. Over the coming days you will want to fine tune these settings up and down to find the best overlocks for your new GPU

To restart the miner, you can do this remotely from your laptop:



Or type

**miner restart**

On the miner itself

### Summary of what we have done so far:

- Installed new power supply which can power all 4 GPUs
- Installed a new Nvidia 3070 Ti GPU
- Restarted the miner
- Updated the clocks and power settings for the new GPU
- Restarted the miner running Ethereum





## Mining other coins

While my focus has always been to mine Ethereum, there will come a time soon when we are unable to mine this incredible coin. This will happen when Ethereum moves to proof of stake. This is scheduled to happen sometime in the middle of 2022

With this in mind, we need to begin trying to mine other coins, even on a part time basis so we are familiar with the process of mining other coins.

On top of this, we can dual mine on these LHR cards to unlock even more profitability.

### What is LHR?

LHR stands for lite hash rate, and it was implemented by Nvidia to discourage mining. It nerfs the card and makes it less profitable to mine Ethereum by disabling half of the card. However, a lot of mining software has found ways around this to get **some** efficiency back.

In this next section I will show you how to mine Ravencoin on the 3070 Ti which is immune to LHR!

Yes, it is immune to LHR so the full power of your GPU can mine Ravencoin without limitation. This also applies to some other coins. The LHR detection inside these advanced GPUs cannot detect all mining algorithms and KAWPOW, which is what we use to mine Ravencoin, goes undetected.

After that I will show you how to dual mine Ethereum and TON coin on the same GPU which is likely the most profitable configuration in USD terms per day.

The important thing to remember is we are building our mining skillset, so we are able to take better advantage of the hardware we have and adapt to the ever changing crypto mining business.

## Ravencoin – Mining with Full Rig

This section will show and teach you how to mine Ravencoin with your entire rig. In the next section I will show you how to split the rig and mine Ethereum **and** Ravencoin on the same rig.

But first, let's learn how to get the full rig mining Ravencoin as this is considerably easier.

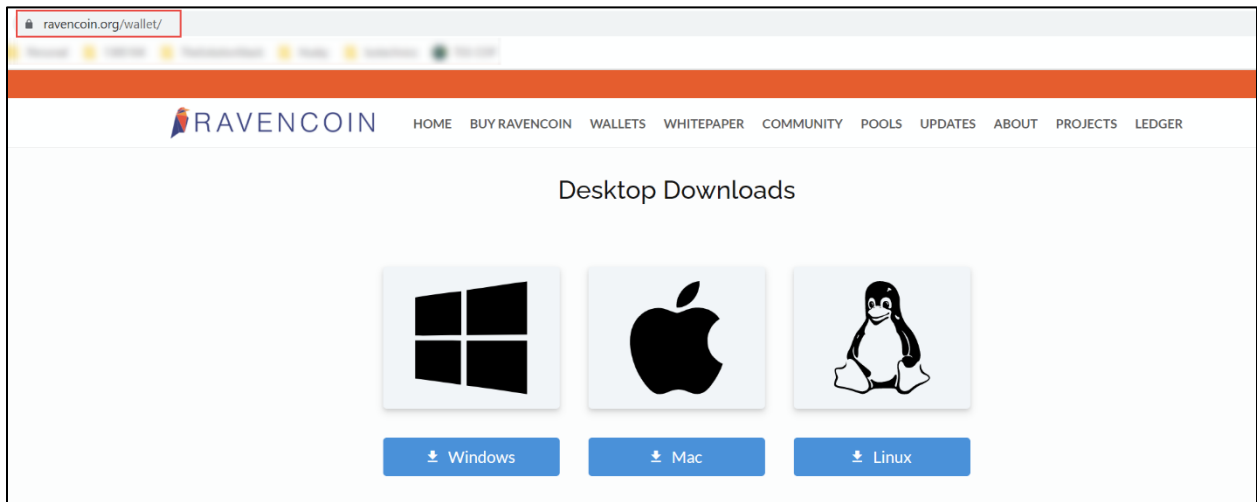
Ravencoin is a terrific crypto project. It should be top of your list of other coins to mine after Ethereum goes proof of stake.

It is a peer-to-peer blockchain based on Bitcoin that is focused on the transfer of assets. It can also be used for NFTs. The blockchain is mined by the proof of work algorithm KAWPOW and is immune to ASIC miners. This means GPU miners have an in and are the only way this blockchain can survive.

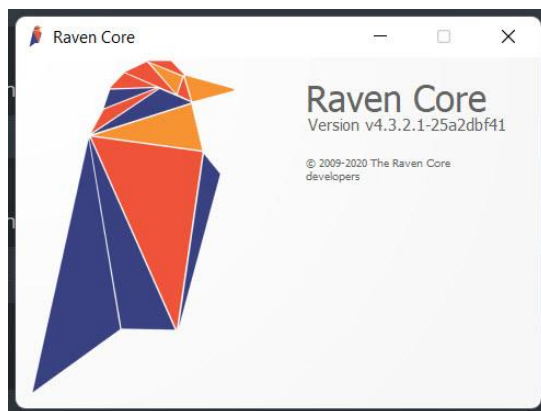
After Ethereum goes proof of stake, many miners will migrate to this blockchain. It is important you know how to mine Ravencoin, so you have this in your back pocket ready to go.

### Create a Wallet

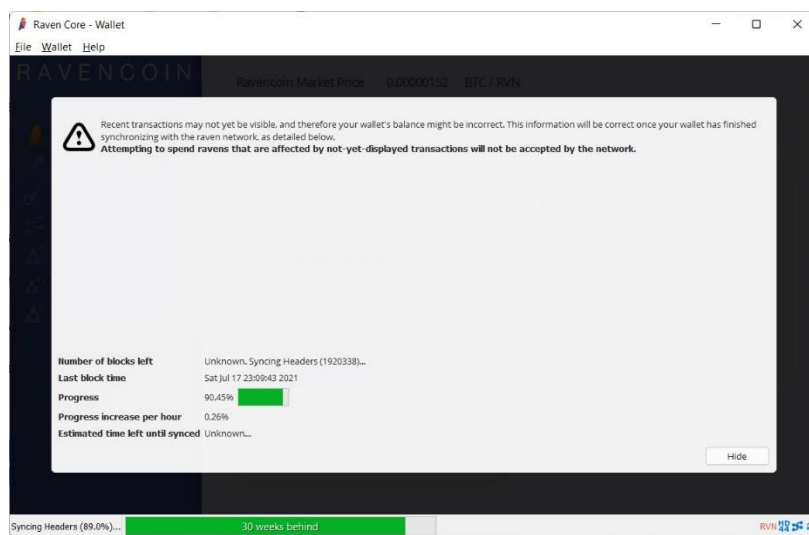
The first step you will need to follow is to create a wallet to receive the Ravencoin you mine. I recommend you use their native wallet software called Raven Core. It is available for download off their official website



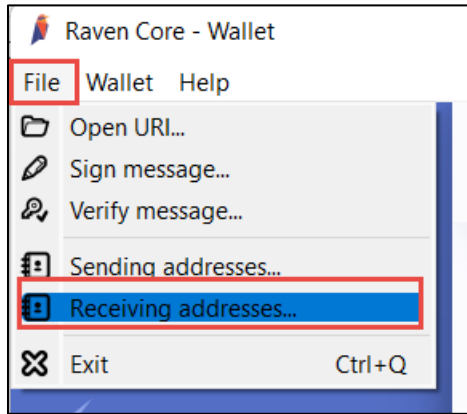
Download the version appropriate for your OS on your laptop (not the mining rig)



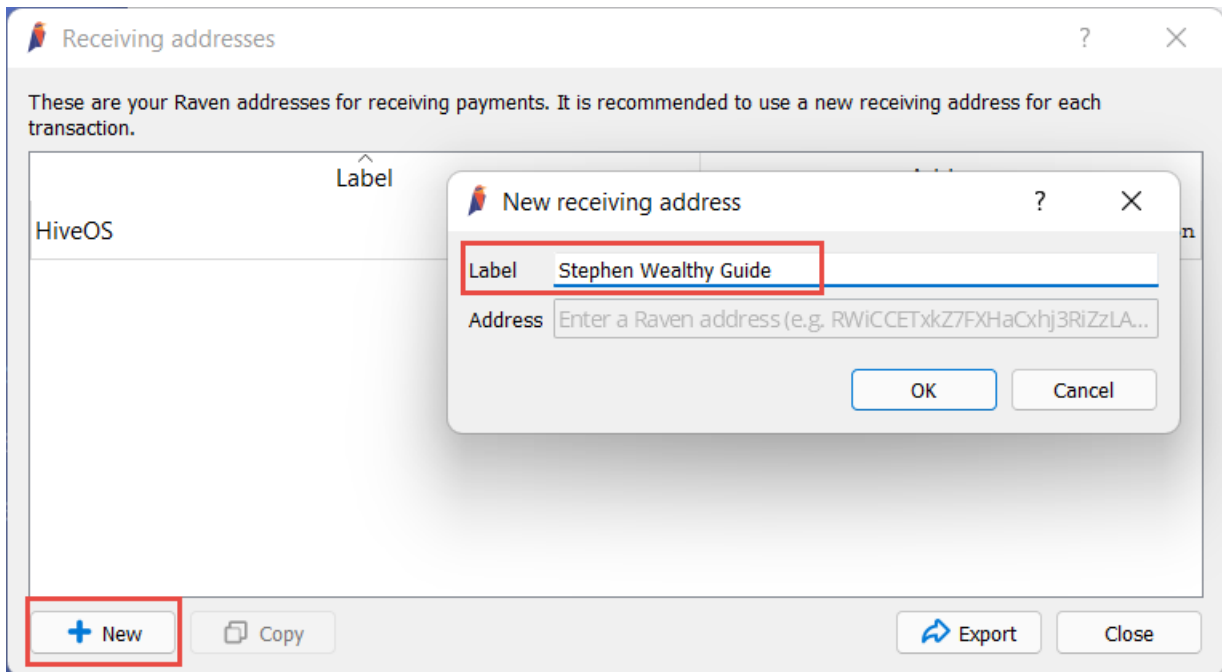
Once you download and install their software and wallet, you will need to synchronize your laptop (not the mining rig) to their block chain



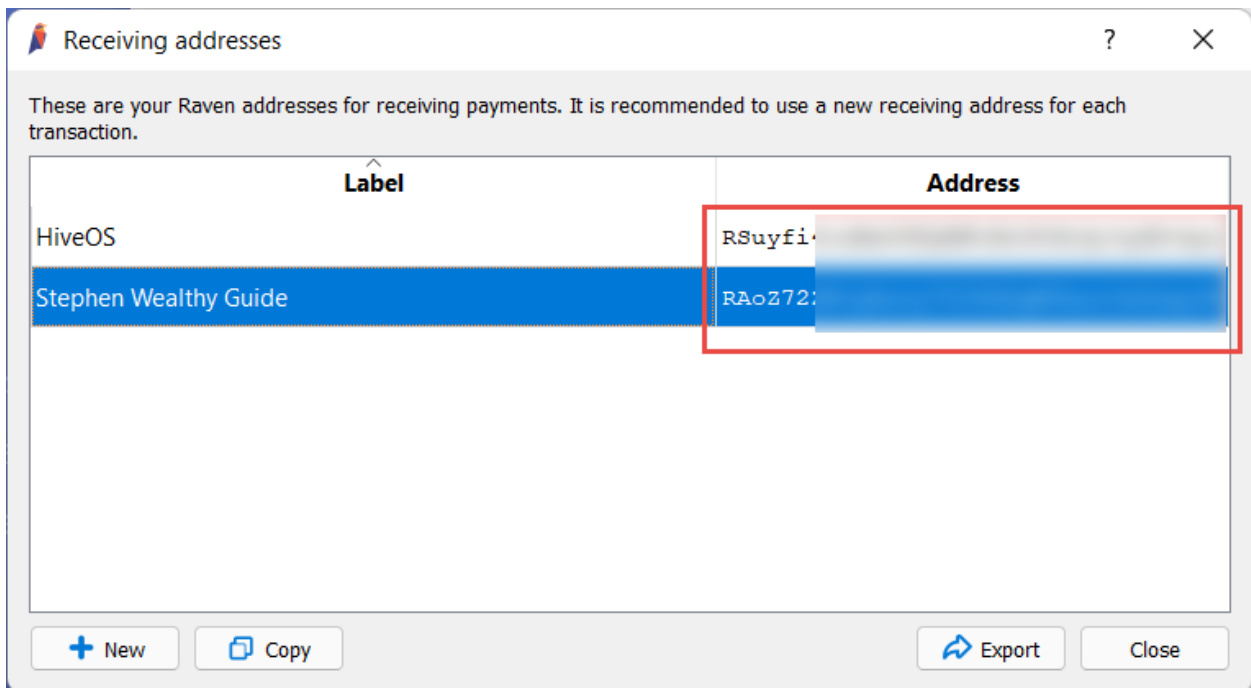
Once synchronized, you can make a wallet to receive coins.



File > Receiving Addresses



+ New > Add a Label > OK



Then you have your wallet address  
Copy it, now let's go over to Hive OS





Over in Hive OS, click on your **Farm**, then **Wallet**, then **Add Wallet**

Fill out the new wallet form like this

**New Wallet**

Coin: RVN

Address: RAoZ72ZK...

Name: Ravencoin Wallet

Source: Choose exchange, wallet type or describe somehow

Save as global wallet  
If checked - global wallet, that applicable in all available farms will be created. If not - farm wallet, available only inside current farm does.

Fetch wallet balance  
**BETA** Currently you can fetch balance from exchanges, pools and blockchains:  
[Show supported](#)

Buttons: Cancel, Create

Now we need to create a Flightsheet so we can begin mining Ravencoin

So, click **Farm > Flight Sheets >** and begin creating a flight sheet like this:

Click and drag to change order

1	Coin: RVN	Wallet: Ravencoin	Pool: 2miners	Miner: T-Rex Miner
2	Coin: RVN	Wallet: Ravencoin	Pool: 2miners	Miner: TeamRedMiner

Name: Odd

Buttons: Cancel, Update

Yours might be different because you may or may not have AMD cards in your machine.

The first row, as indicated, is to mine with the Nvidia Cards. You can see the pool that I'm using and just use the default configurations for T-Rex and TeamRedMiner.

It really is this simple.

Name and save the flight sheet.

Next click **Farm > Select your worker > Flight Sheet**.

Find your new Flight Sheet and click the rocket.

RVN	Ravencoin	2miners	t-rex
RVN	Ravencoin	2miners	teamredminer

Rocket icon highlighted

The new flight sheet will load, and your machine will begin mining Ravencoin.



		TEMP	FAN	CORE	DPM	VDD	MEM	PL	
* HD Graphics 630 - Biostar									
00:00.0									
GPU 0	GeForce RTX 3070 Ti 7982 MB - EVGA	40.13 MH	59°	69%	243 w	0	1550	-	2400 250
02:00.0	Micron GDDR6X - 94.04.5A.00.F0 - PL 100 W, 310 W, 325 W								
GPU 0	Radeon RX 6700 XT 12272 MB - Gigabyte	25.45 MH	55°	61%	168 w	-	2000	3	912 1075
05:00.0	Samsung GDDR6 - 113-D51210-R67XTAE								
GPU 1	GeForce GTX 1060 6GB 6078 MB - EVGA	9.048 MH	58°	63%	85 w	0	110	-	1000 85
07:00.0	Micron GDDR5 - 86.06.27.00.60 - PL 60 W, 120 W, 140 W								
GPU 2	GeForce RTX 3070 7982 MB - MSI	29.09 MH	59°	77%	140 w	0	110	-	2000 140
08:00.0	Samsung GDDR6 - 94.04.3A.40.65 - PL 100 W, 220 W, 220 W								

Here is that mining rig mining Ravencoin now.

Notice how the 3070 Ti is outperforming the 3070 Non LHR. This is because KAWPOW is immune to LHR and it is able to mine at full speed. This contrasts with the Ethereum mining results where the 3070 Ti couldn't match the 3070.

Last thing to note is how the clocks and power limits are different. This is an important thing to note with each coin is you will need different overclock and power settings to take full advantage of your card.

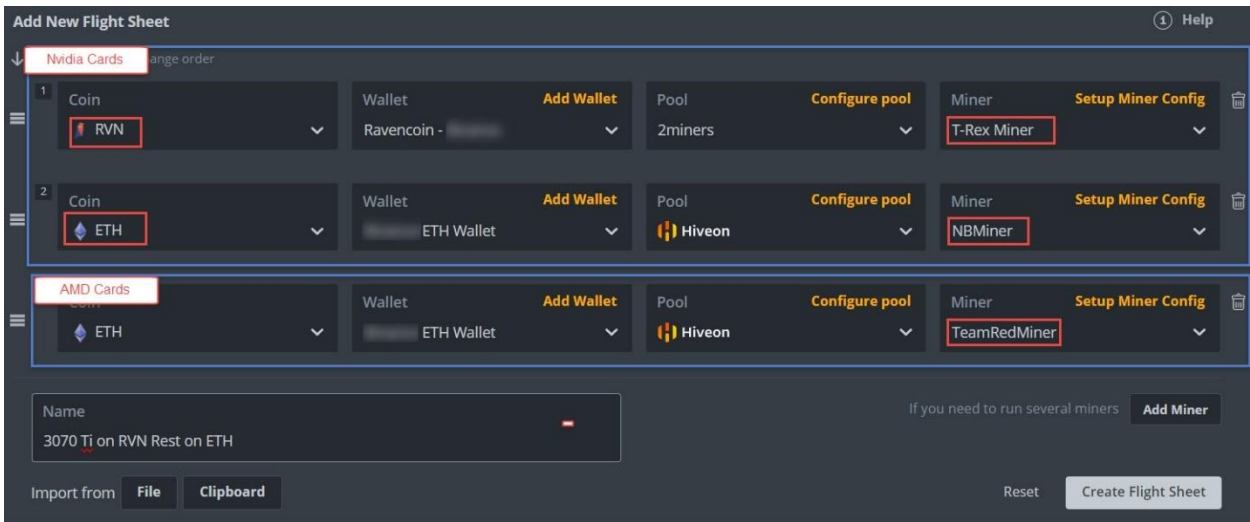
### Ravencoin – Partial Rig

This section will show you how to put the LHR card on Ravencoin, while putting the Non-LHR cards on Ethereum and then putting the AMD Card on Ravencoin.

The first rule we need to know about when doing this, is you cannot have T-Rex miner loaded twice.

So we need to use two different miner software to run the Nvidia cards and then TeamRedMiner for the AMD card.

Here is the flight sheet that we configure.



First, we add the RVN miner and I like to use T-Rex miner for this. My intention is to use this miner on just the 3070 Ti so I get full mining speed.

Then I click "Add Miner" down in the button right corner.

Second, I add the ETH miner for the rest of the Nvidia GPUS.

"Add Miner" again

Third I add the ETH miner for the AMD GPU.

So you can see in the first two rows for the Nvidia cards, that we have gone with T-Rex Miner for Ravencoin and NBMiner for Ethereum.

For the AMD card we have left it as the default configuration we have used before. Nice and simple, no changes required here.



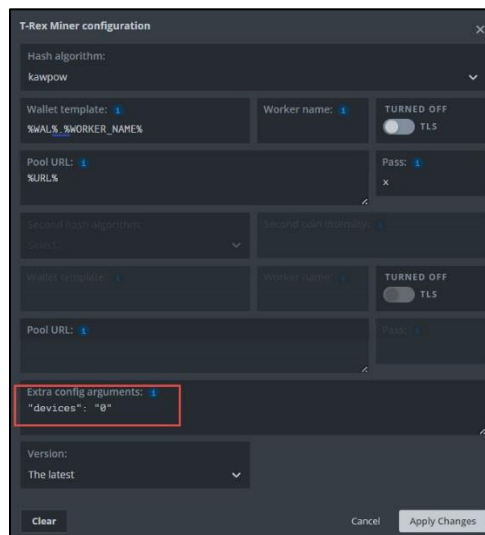
Now, speaking of changes, we do need to put some extra command arguments in for T-Rex and NBMiner so they don't trip over each other and only use the cards we specify.

## Settings

* HD Graphics 630 - Biostar										
00:02.0										
GPU 0	GeForce RTX 3070 Ti	7982 MB · EVGA	59.18 MH	52°	63%	188 w	0	1550	-	2200 190
02:00.0 Micron GDDR6X · 94.04.5A.00.F0 · PL 100 W, 310 W, 325 W										
GPU 0	Radeon RX 6700 XT	12272 MB · Gigabyte	46.32 MH	48°	61%	114 w	-	1300	3	0 1075
05:00.0 Samsung GDDR6 · 113-D51210-R67XTAE										
GPU 1	GeForce GTX 1060 6GB	6078 MB · EVGA	21.48 MH	54°	63%	76 w	0	100	-	1000 75
07:00.0 Micron GDDR5 · 86.06.27.00.60 · PL 60 W, 120 W, 140 W										
GPU 2	GeForce RTX 3070	7982 MB · MSI	61.11 MH	56°	63%	120 w	0	-100	-	2300 120
08:00.0 Samsung GDDR6 · 94.04.3A.40.65 · PL 100 W, 220 W, 220 W										

Remember this image from before? We need this to determine the GPU numbering. Of note, we see the 3070 Ti is GPU 0.

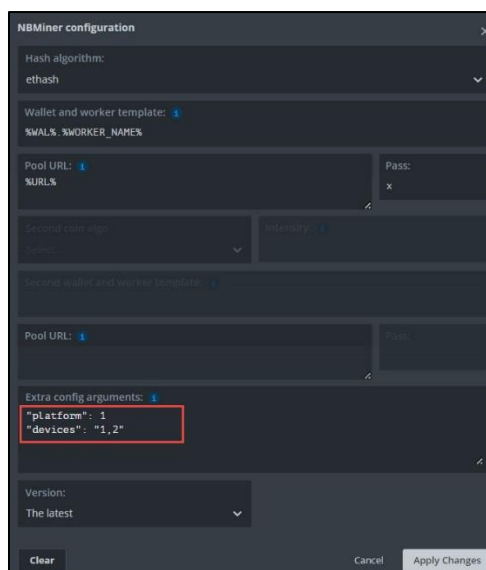
Let's open T-Rex Miner and make it only mine using this GPU.



That is all we need to add!

This tells T-Rex Miner to only use GPU 0. Because T-Rex can only use Nvidia GPUs we don't need to worry about it using the AMD GPU.

Now, we need to setup NBMiner so let's do that.



The platform: 1 argument means it will only use Nvidia GPUs (ignore the AMD one) and then only use GPU 1 and 2. This makes it ignore the 3070 Ti.

That is all we need to do.

Save this Flight Sheet and let's run it.





☆ Odd Lots				LA 0.29 0.39 0.50 ⚡ 595.0w	
3070 Ti on RVN Rest on ETH flight sheet					
t-rex v.0.25.6 A 2	KAWPOW	76%	57°		
RVN	Ravencoin	2miners	40.11 MH	40.11	
nbminer v.40.1 A 4	ETHASH	74%	56°	57°	
ETH	ETH Wallet	hiveon	83.87 MH	22.84	61.03
teamredminer v.0.9.2.1 A 4	ETHASH	63%	51°		
ETH	ETH Wallet	hiveon	46.50 MH	46.50	

How cool is that!

- LHR 3070 Ti mining full speed on Ravencoin
- Non LHR 3070 and 1060 mining full speed on Ethereum
- AMD 6700 XT mining full speed on Ethereum

Mining is a cool hobby that is flexible, puts money in your pocket, and is incredible fun too.

## Dual Mining – The Urge to Mine More

There is a common theme across many GPU miners – how can I maximize profits and earn EVEN MORE. Let's hit it. There is a little-known trick that is becoming popular among miners who have LHR GPUs: **mine two coins at once.**

But you just showed us... mining Ravencoin and Ethereum on the same rig.

No, I mean MINE TWO with the same GPU!

That's right, you can mine Ethereum and another coin on the same GPU and this helps to unlock a lot of the unused resources within the LHR GPU like the 3070 Ti.

The most profitable combination at the time of writing this guide is ETH + TON Coins.

### TON Coin – The Open Network

First, we need to generate a unique TON wallet so we can mine our coins to this wallet. Sensing a common theme yet? We always need a wallet to mine our coins to. So, let's go get one.

<https://ton.org/wallets>

Is where we get our TON wallets. Download the correct application for your operation system.

Follow the steps to get your wallet and then get your wallet address by clicking Receive TON Coins.

Copy and paste this wallet address onto notepad.

Next, we go to the <https://tonwhales.com/docs/pool> pool website where we will mine our TON Coins. We need to register our wallet address with the pool. If we don't register before we mine to the pool, then all the shares we send will be rejected.

So, let's signup with the telegram bot @WhalesPoolBot, by following the link off their website.

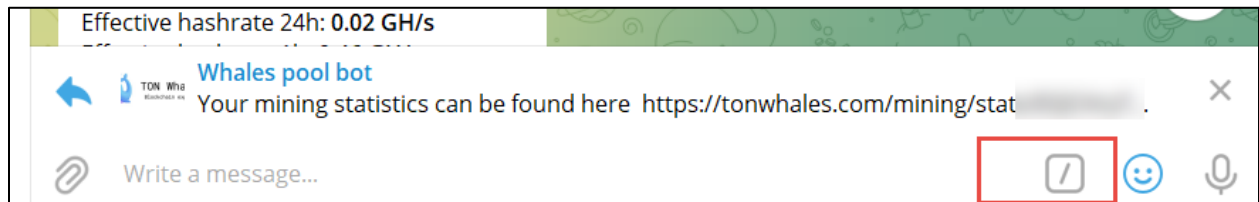
Follow the prompts on their Telegram bot page and register your wallet address.

It will acknowledge your registration.



Once your registered you can send commands like **/balance** and **/stats**

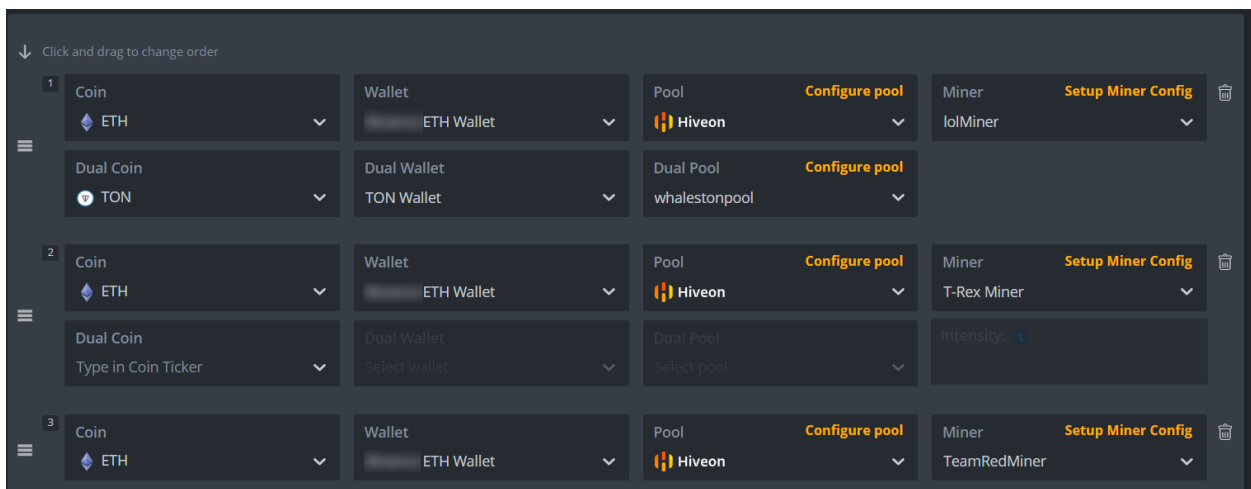
If you click the / button on the bottom you will see all the available commands with this bot.



Okay now that we have the wallet setup and we're registered with the pool, lets setup the flight sheet and get dual mining.

## Flight Sheet for Dual Mining ETH + TON

At this point we only want to set up the ETH + TON dual mining on the 3070 Ti and leave the other cards to mine Ethereum straight. Of course you could change this; but the way I have it set is optimal for current crypto prices.



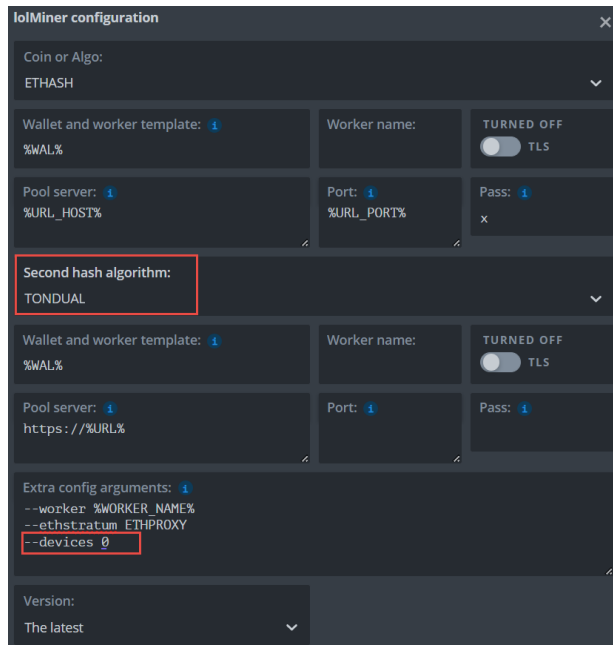
Now I know the above flight sheet looks complicated, but its actually very easy to setup.

Add the first row, **ETH** is the coin, input your **ETH Wallet**, pick **Hiveon** Pool, and then choose **lolminer**.



Next click **Setup Miner Config**.

We need to setup **TONDUAL** in the second hash algorithm.

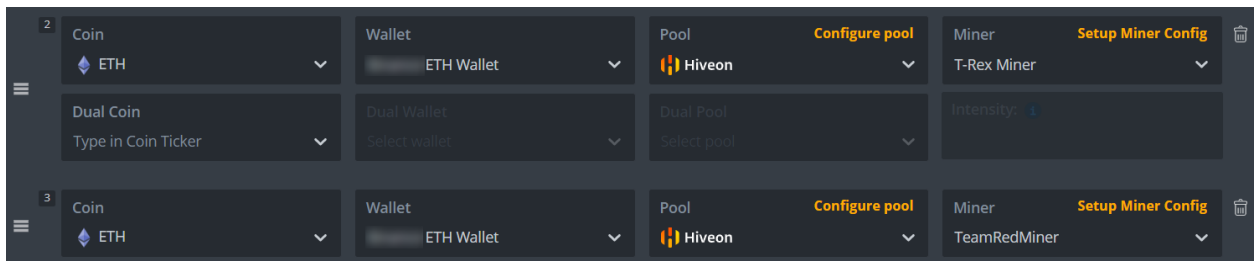


And then at the bottom we need to add the device number to be specific to the LHR GPUs we which to dual mine with.

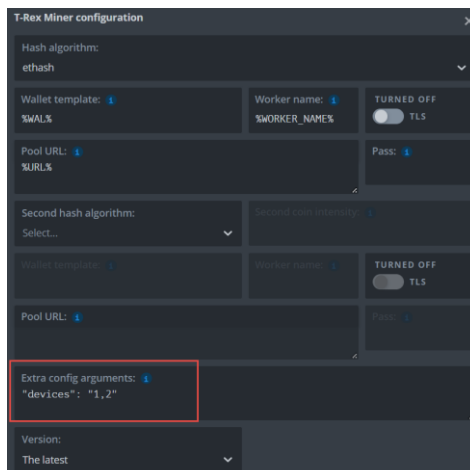
Next in the row below, we need to select TON as the second coin, the TON wallet and then the pool we will use.



The rest of the miners we setup like we did before:



No need to setup dual coin mining for the rest, however we will need to tell T-Rex miner to avoid the LHR GPUs:







### Some important reminders:

- We only add the AMD Miner TeamRedMiner because we have an AMD GPU in the mining rig.
  - o If you don't have an AMD GPU, you don't need to add this line.
- We need to use two separate miners for the Nvidia cards so we can dual mine on the LHR and straight mine on the other Non-LHR cards.
- We need to tell the Nvidia miners which cards to manage so they don't trip over each other.

### Launch the Flight Sheet

This is always the most fun. If we have setup it up correctly we should see this on the dashboard:



Here are the clock settings:

	TEMP	FAN	CORE	DPM	VDD	MEM	PL
* HD Graphics 630 - Biostar							
00:02.0							
GPU 0	GeForce RTX 3070 Ti 7982 MB · EVGA	56.23 MH	59°	63%	223 w	0	1550
02:00.0	Micron GDDR6X · 94.04.5A.00.F0 · PL 100 W, 310 W, 325 W	1.580 GH					
GPU 0	Radeon RX 6700 XT 12272 MB · Gigabyte	46.39 MH	51°	61%	119 w	-	1400
05:00.0	Samsung GDDR6 · 113-D51210-R67XTAE		78°			3	0
GPU 1	GeForce GTX 1060 6GB 6078 MB · EVGA	21.37 MH	55°	63%	75 w	0	100
07:00.0	Micron GDDR5 · 86.06.27.00.60 · PL 60 W, 120 W, 140 W						1000
GPU 2	GeForce RTX 3070 7982 MB · MSI	61.12 MH	57°	63%	120 w	0	-100
08:00.0	Samsung GDDR6 · 94.04.3A.40.65 · PL 100 W, 220 W, 220 W						2300

Now what do you do with all that TON you'll be mining?

Move it to FTX.com and exchange it to whatever currency you want.

### How much more profitable is dual mining?

How much more can I make dual mining ETH + TON vs just straight ETH?

Well for a 3080 Ti here are the numbers:

NVIDIA RTX 3080 Ti		
	ETH	ETH + TON dual
Hash Rate	85 Mh/s	82 Mh/s on Ethash + 2100 Mh/s on TON
Coins	0.00123 ETH	0.00118 ETH + 0.52626 Toncoin
Profit	\$3.69	\$3.56 + \$1.45 = \$5.01

Dual mining is worth it unless maximum Ethereum is your goal.



## UPDATE

During the writing of this guide a new update for lolminer was released which enables 15-20% more TON for the same Ethereum penalty.

Check it out, and the power dropped by 2 watts too:

		TEMP	FAN	CORE	DPM	VDD	MEM	PL	All	
* HD Graphics 630 - Biostar										
00:02.0	GPU 0 GeForce RTX 3070 Ti 7982 MB - EVGA	56.26 MH 1.864 GH		58°	63%	221 w	0	1550	-	2400 250
02:00.0	Micron GDDR6X - 94.04.5A.00.F0 - PL 100 W, 310 W, 325 W									
05:00.0	GPU 0 Radeon RX 6700 XT 12272 MB - Gigabyte	46.51 MH		49°	61%	113 w	-	1400	3	0 1075 -
07:00.0	Samsung GDDR6 - 113-D51210-R67XTAE			76°						
07:00.0	GPU 1 GeForce GTX 1060 6GB 6078 MB - EVGA	21.45 MH		53°	63%	74 w	0	100	-	1000 75
08:00.0	Micron GDDR5 - 86.06.27.00.60 - PL 60 W, 120 W, 140 W									
08:00.0	GPU 2 GeForce RTX 3070 7982 MB - MSI	61.12 MH		56°	63%	120 w	0	-100	-	2300 120
	Samsung GDDR6 - 94.04.3A.40.65 - PL 100 W, 220 W, 220 W									

One of the best parts of crypto mining is the level of innovation and constant improvement.

## BONUS – Adding Another Power Supply

When you begin expanding a mining rig by adding more GPUs you will quickly run out of PCI Express power cables and need to add another power supply to the rig.

Luckily this is very easy to do if you have the right 24 pin splitter cable handy.

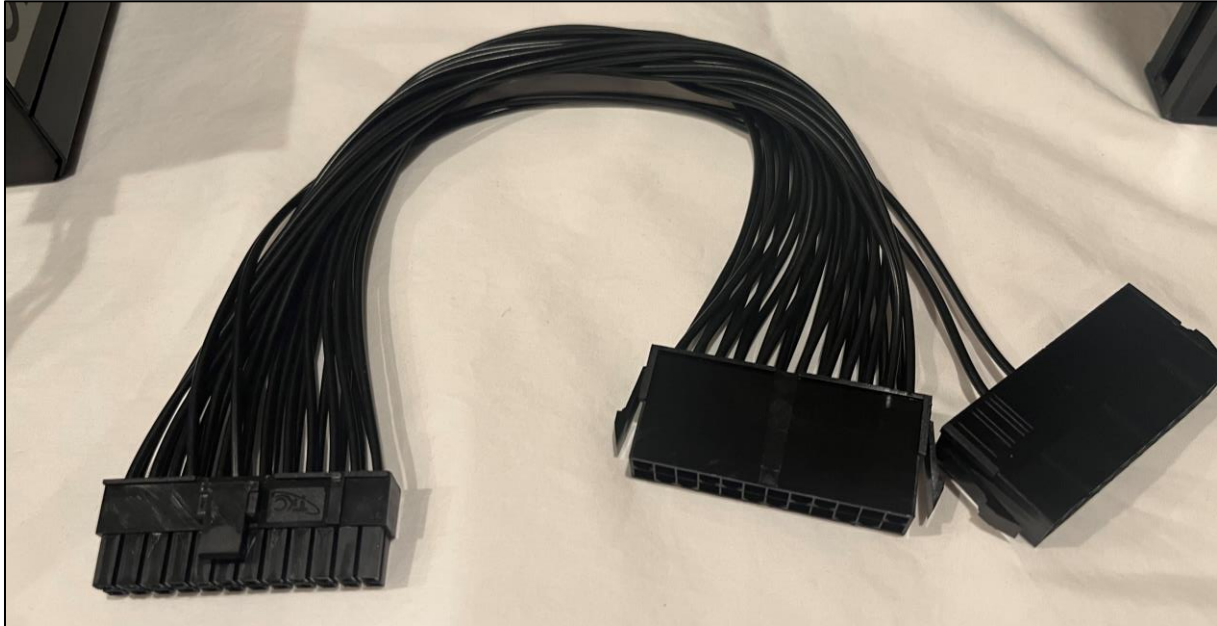
In this bonus section I will show you how to add another 3070 Ti to this rig.



Above, this is the rig we JUST upgraded, and now we're going to add another 3070 Ti to it!

In the picture above, you can see the power supply we are going to add, the riser, splitter, the GPU and the 24-pin splitter cable.

Let's take a closer look at the 24-pin splitter cable



This cable lets us connect TWO power supplies to the same motherboard. Just one power supply will give the power to the board, and the other is just getting a post signal to turn on.

The power supply with the most power should get the end with the all the cables, while the other end, with just two cables, gets the weaker power supply. This one is just getting a post signal to turn on and power the GPUs connected to it.

### Install the Second Power Supply

Let's go ahead and turn off the system, disconnect it from the wall, and install the second power supply right beside the old single one.



The new one is on the right. Next, we screw it into place using the screws provided to us from the frame manufacturer.





Next, we do the following in order

- 1) Remove the old 24 pin power cable from the motherboard



- 2) Connect the “weak” 2 cable splitter to the weaker power supply
  - a. Weak meaning it only powers GPUs while the stronger one powers the motherboard
  - b. This is the second one we just installed



- 3) Connect the “strong” 24 cable splitter end to the stronger power supply



Make sure you connect it nice and snug, image it just halfway in. But we always make sure our connections are clicked snug into place without forcing them.



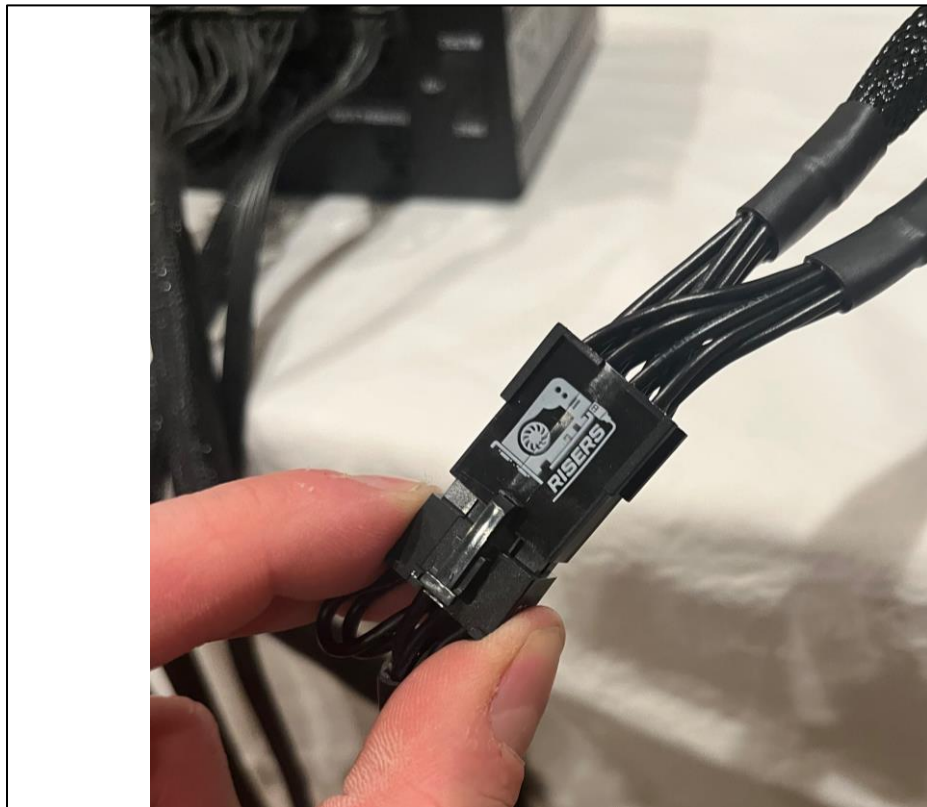
- 4) Connect the single end of the cable splitter to the motherboard



In the image above you can see the single end we put into the motherboard, and the two ends that connect the two power supplies.

Awesome.

Now let's install the extra GPU.



Just like before, same routine, we connect the splitter, riser, and connect the GPU to the mother board. The practice is the exact same as before. Only difference is we connect this new GPU to the new power supply we just added.

That is it!



All connected and installed, its time to power on the system!





Is there anything more beautiful?



Okay now we can't sit still, we have to let the miner boot, but then **STOP** it.

We need to make sure the mining software has the clocks set right for the GPUs and then update the flight sheet in Hive OS.

When I say **STOP** the miner, I don't mean power it off. We just execute the command:

**miner stop**

Once we get to the command prompt on the miner.

Then we open our laptop and set the clocks for the GPUs.



		TEMP		FAN	CORE	DPM	VDD	MEM	PL
* HD Graphics 630 - Biostar									
00:02.0									
GPU 0	GeForce RTX 3070 Ti 7982 MB - EVGA	33°	63%	71 w	0	1550	-	2400	250
02:00.0	Micron GDDR6X - 94.04.5A.00.F0 - PL 100 W, 310 W, 325 W								
GPU 0	Radeon RX 6700 XT 12272 MB - Gigabyte	32°	61%	32 w	-	1400	3	1075	-
05:00.0	Samsung GDDR6 - 113-D51210-R67XTAE	40°							
GPU 1	GeForce GTX 1060 6GB 6078 MB - EVGA	35°	63%	25 w	0	100	-	1000	75
07:00.0	Micron GDDR5 - 86.06.27.00.60 - PL 60 W, 120 W, 140 W								
GPU 2	GeForce RTX 3070 Ti 7982 MB - EVGA	34°	63%	73 w	0	1550	-	2400	250
08:00.0	Micron GDDR6X - 94.04.5A.00.F0 - PL 100 W, 310 W, 325 W								
GPU 3	GeForce RTX 3070 7982 MB - MSI	36°	63%	51 w	0	-100	-	2300	120
09:00.0	Samsung GDDR6 - 94.04.3A.40.65 - PL 100 W, 220 W, 220 W								

There it is!

It shows in the operating system, and I've updated the clock settings. Your GPU will be different and require slightly different clock settings. So, you will need to know these.

On top of this, you want to make sure you have the correct settings for your older cards. Sometimes when adding a new GPU they will shift around.

Next, we need to setup our flight sheet if we have specifics on what card is mining which coin.

If you want the entire rig to mine the same coin, you likely won't need to make any adjustments here.

But if you're dual mining or having AMD and Nvidia in the same rig mining different coins you will need to adjust your flight sheet accordingly.

Coin or Algo:  
ETHASH

Wallet and worker template: [i](#)  
%WAL%

Worker name:  
TURNED OFF

Pool server: [i](#)  
%URL\_HOST%

Port: [i](#)  
%URL\_PORT%

Pass: [i](#)  
X

Second hash algorithm:  
TONDUAL

Wallet and worker template: [i](#)  
%WAL%

Worker name:  
TURNED OFF

Pool server: [i](#)  
https://%URL%

Port: [i](#)

Pass: [i](#)

Extra config arguments: [i](#)  
--worker %WORKER\_NAME%  
--ethstratum ETHPROXY  
--devices 0,3

In my sheet above, I had to add the "3" in the devices argument so it would start communicating with the new card.

If you have any problems, please reach out to me to me on [Twitter](#)

After this run the command: **miner restart**

on the mining rig and watch the results.



ETH + TON Coin flight sheet				46°		51°	
<b>lolminer v.1.46 A 1</b>				<b>ETHASH</b>	74%		98%
ETH	Binance ETH Wallet	hiveon	108.8 MH	54.39		54.38	
TON	TON Wallet	whaleston...	3.524 GH	1.770		1.754	
<b>t-rex v.0.25.8 A 4</b>				<b>ETHASH</b>		53°	54°
ETH	Binance ETH Wallet	hiveon	82.64 MH		63%		63%
					21.52		61.12
<b>teamredminer v.0.9.3 A 1</b>				<b>ETHASH</b>		45°	
ETH	Binance ETH Wallet	hiveon	46.49 MH	61%			
				46.49			

Mining! The highlighted in red is the new GPU mining away!





### Closing Remarks

Between the 3 guides I have written:

[Beginners – How to Get Started with A Gaming PC](#)

[Advanced – Complete Guide for Building a Mining Rig](#)

[Expert – Expanding an Existing Rig for More Passive Income](#)

You have all the knowledge you need to start mining with a gaming PC, build your first rig, and expand your mining to make more money.

If you have any questions please reach out to me on [Twitter @StephenWealthy\\_](#) or in our [Zzz Money Club discord group](#) and I would be happy to help you.



## Common Questions

### ***How much electricity does this consume?***

Computers are surprisingly energy efficient. A lot of work has gone into making them this way with advancements in chips and power modulation.

That being said, the test rig I've shown you will consume 231 watts from the wall. What I mean by that is if we hook up a watt meter and measure it, it will pull about 231w. This is the most accurate measurement of how much power this computer pulls.

Now, take that and divide it by a kilowatt hour, and then multiple it by your electrical rate. My rate here is \$0.10 a kilowatt hour so this will cost me \$16.64 to run non-stop for a month.

Now keep in mind this is going to generate us \$6-10.00 a day. Not a bad trade off.

### ***How can I get more GPUs***

Yes, current supply shortages and sky-high demand are making it very difficult to get GPUs. If you can't find a good deal online, my recommendation is to go into your local retailer and buy any if they have some in stock.

If they don't have any in stock, then put your name on a waitlist.

My favorite brands are EVGA and ASUS, and I like the top-of-the-line ASUS Strix and EVGA FTW3 models. They stay cooler and run a bit more efficient.

### ***Am I going to wear out my GPUs or computer?***

While it is true we are running the machine 24x7 we are also running the hardware at about 60-70% of the limit. NiceHash will monitor and adjust the load to keep things safe and within spec.

These GPUs are expected to last 4-5 years even with operating non-stop every day. It is actually more likely they will become uneconomical for mining before wearing themselves out.

### ***Cooling and long-term running of your machine***

Make sure you have adequate airflow over the machine so the computer can stay cool and operate within spec. They don't like it too hot or too cold. Try to aim for 27-32 degrees Celsius or 80-90 degrees Fahrenheit.

### ***With Ethereum moving to POS why start mining now?***

It is true that Ethereum is moving to proof-of-stake and proof of work mining will be shut off for this incredibly profitable coin. But there will always be another coin to mine and NiceHash will always ensure you're always mining the most profitable one.

On top of this, you have the opportunity to learn how crypto mining works with a PC that you've already bought. When the prices for mining hardware come down next year when the other miners FOMO'd in and want their money back, you have the experience and know how to mine crypto.

Learn to mine today, then prey tomorrow.

### ***Why are you sharing this for free?***

Ethereum mining has been one of the best investments I've ever made. It has put more money in my pocket than any other single investment I've made. It has been tremendous, and I want to give back to that very same community. This is my contribution to the decentralization of



money, and the power it can give. Ethereum is the best and I want to give a bit to this project and help in my small way.

There is no scam here. I don't want your wallet address, and I'm not asking for anything in return. I want you to be involved with crypto and I want you to make money off it.

This is just my way of giving back to the very thing has been an incredible blessing and wealth builder for me.

### ***How can I give back to you?***

First, follow me on Twitter. I value network and social media a lot. So, following me on twitter is a big vote of confidence for me. If you already follow me, thank-you.

Next, after you've been mining for a while, post a picture of your rig and tag me. I want to share in your success.