Transcript

July 24, 2023, 2:11PM

Interviewer:
I would like to ask again if you agree to participate in this interview?

Storage Provider:
Yeah, go ahead, please.
This is all for research, so I'm fully supportive.

Interviewer:
OK, great.
So my first question is whether you rent out space in a co-located data center or do you have your own hardware?
Tell me a little bit about your operations as a storage provider in Filecoin.

Storage Provider:
I started in my garage, basically and then it evolved into a small data center, and I wanted to take benefit off of the solar panel and the battery units that I have at my home.
Explains reasons for buying the solar panels

Interviewer:
Right.
So you do not rent out space in a data center?

Storage Provider:
No, I have a small room at the back of my house, which is a data center.

Interviewer:
OK, yeah, I understand.
And I guess in this case it will probably be hard to kind of isolate the energy consumption of this room in your home.

So you probably couldn't calculate something like power usage effectiveness, or have you tried to calculate that?

Storage Provider:
So for me the thing is how many sockets I am providing over to that room.
That room has 3 30A, 208V sockets.
The power going from those circuits to the equipment go through metered PDUs and those metered PDUs show you the utilization in terms of A on each of their subfeeders as well.
For example, if there's a 30A that is coming in, it gets splitted into two PDUs.
If you know what a PDU looks like, then some of them have a single 30A that fit within them and some are divided into 15 or 20A subcircuits.
So I have both of those and they do show the number of Amperes, how much equipment is using right now, how much power is being consumed.
I did not have fancy graphs.
I wanted to do that through SNMP, but time did not allow me, but that's one of the goals.

Interviewer:
OK, cool.
Other than storing and sealing data, do you also have anything else going on such as cooling or any additional things that are not IT-processes connected to the Filecoin network?

Storage Provider:
Yeah, definitely.
There's cooling, there's an air conditioner over there.
what I want to do is automate this one a little bit more, right now when the temperature goes beyond a certain level, I turn on the AC.
Other than that, there's an inlet, and then there's an outlet, so that passes the cold wind from the inlet at night till morning around 11:00 AM and after 11:00 AM air conditioner turns on and then at like 5-6 PM when it cools down, it's back to the airflow. That's how I I improve the the electric utilization as well.

Interviewer:

Yeah, that's smart.
Other than that, from what you said and from what I know you are quite small storage provider for now at least.
But do you still use multiple minerIDs in your operation, or is it just one minerID?

Storage Provider:
Just one minerID.

Interviewer:
OK.
And I saw you also took part in the energy validation process.
So the minerID that you provided there is the minerID that you still use, right?

Storage Provider:
Yeah, it is.

Interviewer:
OK, great.
So, a little bit more detailed questions.
So, since you are tracking your energy consumption, can you estimate how much energy in kilowatt hours sealing a sector consumes with your hardware?

Storage Provider:
So, there are two things that happen.
Number one, when I will be doing my own sealing and second, if I'm using sealing-as-a-service provider.
So there are two options.
One, remotely outside my data center somewhere else the sealing happens.
For example, at Alliance, those are one of the you know, sealing-as-a-service providers.

Interviewer:
OK.
And and which one do you do more or is it kind of evenly distributed?

Storage Provider:
Yeah.
The thing is that with the sealing-as-a-service providers, they have huge pipelines and they have optimized our flows within them as well.
So what they do is they give you sectors and if you're doing sealing at your own, the number of sectors you can seal are limited. With sealing-as-a-service the amount of power that the equipment is using should be less.
But to generate the same number of sectors, compared to when you are using sealing as a service, so when I'm using for example for my own sealing, then I have two workers they consume around 500 watts each.
So it's about 1kW or 1.4kW maximum because then the GPUs turn on, then the power fluctuates. When the GPUs are idle, then they did not consume that much power.
So, it fluctuates between 1000 Watt to about 1.5kW.

Interviewer:
How much time does sealing a sector take and also do you seal like 32GiB or 64? Because I know there are two types.

Storage Provider:
Right. So, I seal the 32GiB sectors. I do not have any 64GiB sectors.
For 32, the PC1 takes between three to four hours.
That's the part one, then PC2, which is depending on the equipment availability maybe half an hour or so and then wait time which is 45 minutes and then C1, C2.
So eventually about 7 hours is the total duration.

Interviewer:
And do you run the whole sealing process on one machine or is it PC1 for example is on one machine, then PC2 on another and so on?

Storage Provider:
Definitely, so PC1 is on one machine and then whenever I need GPUs, GPUs are on a different machine, so PC2 is on a different machine, not on the same.

Interviewer:
So you said between 1 and 1.5 kilowatts, that's for which machine?

Storage Provider:
For both of the systems that do PC1 and PC2, for both together.

Interviewer:
OK, that's good.
And then regarding the storage, do you know the power consumption and the capacity of a rack in your system, so power consumption again in kilowatts and capacity in TB/PB?

Storage Provider:
Yeah.
I have 200TB hard drive. And these are a mix of 4TB and 12TB hard drives.
There are 36 4TB drive and 12 by 12TB hard drives, right. So, each hard drive is either 4TB or 12TB.
Whatever the capacity, the power consumption it is using is 5 to 10W for each hard drive. So on average, if you take an average between 5W and 10W, then it is around 7W.
So if you multiply (36 + 12) = 48 by 7, that would be the wattage for the hard drives.
Then for the server and for the controller I add another 500W for those.

Interviewer:
OK.
And then what is your average daily or monthly energy consumption?
Because maybe if we can get that and also calculate the sealing and the storage energy, then we can come up with something like a power usage effectiveness value.

Storage Provider:
Yeah, exactly. Just a second, the number, I think I provided to Marc and the others.
Let me open that document because it has more details, it's about like 3.7 kilowatt hours. That’s the total which is being consumed.

Interviewer:
OK.
And then I guess lastly about your Filecoin operations, do you know what your energy mix is or is it all coming from the solar panels, or do you get also energy from the local grid?

Storage Provider:
Yeah. I think for my operations it's about 60% on solar and 40% from the outside network.

Interviewer:
So I guess for these 40% I could probably just take the energy mix that is the right one for your location, or do you purchase renewable energy certificates or anything like that?

Storage Provider:
Yes. So I purchase RECs from *anonymized REC provider*, they are our local energy service provider in the locality. I think, the rate for them is if I'm not forgetting I think it's $0.22 or $0.25 uh per kWh.

Interviewer:
And other than that, do you also mine other cryptocurrencies such as Ethereum or is it just a Filecoin?

Storage Provider:
No, you cannot mine Ethereum 1.0 anymore.
Do you know that right?
Since September last year, you cannot mine anymore.

Interviewer:
Yeah, I mean, I guess if you have the resources, you can still be a validator.

Storage Provider:
No, not really.

I stopped doing that.
There's no profit in doing that.

Interviewer:
Yeah, I guess you also have to invest a lot up-front to have any chance.

Storage Provider:
Yeah, exactly.

Interviewer:
OK. I think those were all of my questions.
So we're done pretty quickly.
Maybe just one more thing about your hardware.
Would you mind giving me the exact models of your machines and everything.
You can also just send me the detailed information per email.
It can remain private; it won't be published.

Storage Provider:
Yeah, I can tell you a few things right now, if you have more questions then I can definitely provide answers via email.
So the JBOD, I have the 60 drive JBOD.
The servers where the hard drives are as well, tt's a mixed environment.
Each cell can take 36 hard drives.
The PC1 PC 2, they are Supermicro motherboards, each one with 1TB of RAM.
The GPUs are NVIDIA 830, there are two of them, they are being used for sealing purposes. For the window PoSt and winning PoSt, I also have two separate GPU, so four GPU are production and then there's the one GPU, a A2000 which is on the Lotus Minor itself.
So, 5 GPUs in total and all in all, all are in use.
Supermicro motherboard, AMD processor.
And the sealing pipeline uses the same 7702P processor and the for the Lotus miner it is 7412 processor.
All the motherboards are single socket.
Then the disks, one of the disk servers is a storage map over NFS.
The network is all capable of doing 100K different 10GB card, 48GB cards, 100GB

cards.
I use a copper direct attach cable for all the connectivity and the external Internet connection is 5Mbps.
The air condition unit is 10,000 BTU, it is wall mounted
That’s mostly it.
Omitted information about expanding and future plans as a SP

Interviewer:
OK, that's great. And then lastly, you mentioned around 317 kilowatt hours for what you reported for the energy validation process, for which month was that?

Storage Provider:
It’s 3.7kW.

Interviewer:
Oh, OK, and for which month was that?

Storage Provider:
It's all roughly about the same every month, 3.7.

Interviewer:
OK.
And then in these months, did you mostly use sealing as a service, or did you seal on your own machines?

Storage Provider:
Mixed, sealing as a service and sealing on my own.

Interviewer:
Was it about 50-50?

Storage Provider:
If you're not, for example, sealing on your own, sealing as a service and those days because when the equipment is on, when the processor is on, even if it's not doing much, it is still consuming power. Right?

Because once you have tuned the processors to run at full clock rate, you have GPUs consuming a lot of fan power.
The difference is maybe like 200W up and down. The machines are still running, they're running the fan, they're not idle. Even if you put on more load on the AMD processors, the difference would not be more than 200W.

Interviewer:
OK, good.
Thank you so much.
These were all of my questions.
I will stop the recording now.