CS553 HW–3

Configuration 1

Private cloud configuration:

	Description	Price per Item	Quantity	Total Price
Compute Servers	RAX XH8-2154	$11,235.00	2,500	$ 28,087,500.00
Network Switches	Mellanox MSN2700-CS2FC Spectrum Based 100GbE 1U Open Ethernet Switch	$ 5,950	83	$ 488,911.50
Network Cables	10Gtek for Mellanox MCP7H00-G002 100Gb/s to 2x50GbE (QSFP28 to 2xQSFP28) Direct Attach Copper Splitter Cable, Breakout Passive Copper	$ 41.99 ~ $42.00	2,606	$ 109,452
Racks	42U 35" Depth (24"x35" x84") 19" IT & Telecom Cabinet SYSRACKS SRF 42.6.9 G	$990	2500 + (83*2) + 24*4 = 2762 2762/ 42 = 65.76 => 66	$ 65,340
Storage Servers	STX-JB JE106-0420-SAS3	$52,332.00	24	$ 1,255,968.00
Electric Power	Region (Ohio)	$0.1574 / kWh	2075.35 kW/h	$ 14,307,711.94
Cooling	Region (Ohio)	$0.1574 / kWh	2075.35 kW/h	$ 14,307,711.94
Administration	1 person per 500 servers	$ 1,50,000	6	$ 4,500,000.00
TOTAL	N/A	N/A	N/A	**$ 63,122,595.38**

Configuration - 2
Private cloud configuration:

	Description	Price per Item	Quantity	Total Price
Compute Servers	Mac Mini	$ 1,999	1000	$ 1,999,000
Network Switches	TP-Link 48-Port Unmanaged Gigabit Ethernet Switch, Steel Case, 19-inch Rack-Mount(TL-SG1048)	$ 238.95	24	$ 5,734.8
Network Cables	Amazon Basics RJ45 Cat 7 Ethernet Patch Cable, 10Gpbs High-Speed Cable, 600MHz, Double-Shielded, 50 Foot, White	$ 16.70	1024	$ 17,100.8
Racks	NA	NA	NA	NA
Storage Servers	NA	NA	NA	NA
Electric Power	15.74 cents/kW * power consumption * 40 hr / week * 48 weeks + network switch power	1	150 W + network switch power in W	$ 227,823.73
Cooling	15.74 cents/kW * power consumption * 40	1	150W + network switch power in W	$ 227,823.73

	* 48 + network switch power			
Administration	NA	NA	NA	NA
TOTAL				**$ 2,477,482.06**

Configuration-3
Private cloud configuration:

	Description	**Price per Item**	**Quantity**	**Total Price**
Compute Servers	GPX XS12-24S3- 10 GPU	$ 31,126.00	165	$ 5,135,790.00
Network Switches	D-Link 52-Port Smart Managed Gigabit Switch with 10-Gigabit Uplinks - (DGS-1250-52X-6KV)	$ 494.99	5	$ 2,474.95
Network Cables	BlueRigger CAT6 Ethernet Cable 15FT (1Gbps, 550MHz, RJ45) CAT 6 Gigabit Internet Network LAN Patch Cord - Compatible with Game Consoles, Smart TV, Router	$ 8.99	169	$ 1,519.31
Racks	42U 39" Depth IT & Telecom Cabinet SRF 42.6.10	$ 980	16	$ 15,680
Storage Servers	NA	NA	NA	NA
Electric Power	Power consumption * 24 * 365 * 5	7.33 Cents/kWh in North Dakota	713.8003 kWh	$ 2,172,749
Cooling	Power consumption * 24 * 365 * 5	7.33 Cents/kWh in	713.8003 kWh	$ 2,172,749

		North Dakota		
Adminis-tration	500 server = 1 admin	$ 90,000	1	$ 450,000
TOTAL	NA 9,100,962.26	NA	NA	**$ 9,950,962.26**

Summary table comparing the 2 configurations between the public and private cloud; your cost of power, cooling, and administration should be to cover 5 years of costs

	Configuration - 1	**Configuration - 2**
Public Cloud (including EC2 and S3) Cost over 5 years	$ 267,700,752.00	$ 4,166,160.00
Private Cloud cost over 5 years	$ 63,122,595.38	$ 2,477,482.06

Configuration -1 :
Public cloud (including EC2 and S3) configuration:

- Instance Type: d3.8xlarge
- Term length : 5 year
- Operating system : Linux
- Region : US East (Ohio)
- Payment options : Partial Upfront
- Tenancy : Shared
- EC2 - RI monthly fee for d3.8xlarge = $ 875.02

Total number of instances are 5000

Hence,
Total price for EC2:
=> RI monthly fee * 12 months * 5 year term
=> 875.02 * 12 * 5
=> $ 52501.2
Now calculate it to 5000 instances, then
=> 52501.2 * 5000
=> **$ 262,506,000**

Now calculating for S3:

Slicing 48PB of storage into 12 months * 4 PB. So every month a 4PB of data is read and written.

4PB = ~ 4000TB
Then
S3 Standard storage: 4000 TB per month x 1024 GB in a TB = 4096000 GB per month

Pricing calculations
Tiered price for: 4,096,000 GB
51,200 GB x 0.023 USD = 1,177.60 USD
460,800 GB x 0.022 USD = 10,137.60 USD
3,584,000 GB x 0.021 USD = 75,264.00 USD
Total tier cost: 1,177.60 USD + 10,137.60 USD + 75,264.00 USD = 86,579.20 USD (S3 Standard storage cost)
S3 Standard cost (monthly): $ 86,579.20

Now calculating it to 5 year term,
=> 86,579.20 * 12 months * 5 years
=>**$ 5,194,752.00**

Total Cost for EC2 and S3 is $ 262,506,000 + $ 5,194,752.00 => **$ 267,700,752.00**

Configuration -2 :
Public cloud (including EC2 and EBS) configuration:
EC2

- Instance Type: mac1.metal
- Region : US East (Ohio)
- EC2 - Hourly fee for mac1.metal = 1.083

Total number of instances are 1000
=> 1.083 * 40 hours/ week * 48 weeks * 1000 systems
=> $ 2,079,360.00

EBS:
As per link : https://calculator.aws/#/createCalculator/EBS

Unit conversions
Storage amount per volume: 1 TB x 1024 GB in a TB = 1024 GB

Pricing calculations
1 volumes x 160 instance hours = 160.00 total instance hours
160.00 instance hours / 730 hours in a month = 0.22 instance months
1,024 GB x 0.22 instance months x 0.10 USD = 22.53 USD (EBS Storage Cost)
EBS Storage Cost: 22.53 USD
Total snapshots: 59.83

Initial snapshot cost: 1024 GB x 0.0500000000 = 51.2 USD
Monthly cost of each snapshot: 3 GB x 0.0500000000 USD = 0.15 USD
Discount for partial storage month: 0.15 USD x 50% = 0.075 USD
Incremental snapshot cost: 0.075 USD x 59.83 = 4.48725 USD
Total snapshot cost: 51.2 USD + 4.48725 USD = 55.68725 USD
55.68725 USD x 0.22 instance months = 12.25 USD (total EBS snapshot cost)
EBS Snapshot Cost: 12.25 USD

22.53 USD + 12.25 USD = 34.78 USD (Total EBS cost)
Amazon Elastic Block Storage (EBS) total cost (monthly): **$ 34.78**

Calculating for 5 year plan for 1000 systems :
=> $34.78 * 12 * 5 *1000 => $2,086,800

The total cost for configuration 2 when EC2 and EBS is combined is
=> $ 2,079,360.00 + $ 2,086,800.00
=> **$ 4,166,160.00**

Configuration - 3 :
Public cloud (including EC2)

- Instance Type: p3.16xlarge
- GPU processor : NVIDIA Tesla V100 GPUs
- Region : US East (Ohio)
- Term length : 5 year
- Operating system : Linux
- Region : US East (Ohio)
- Total number of instances are 165

Screenshots and power Consumption Calculations

Configuration - 1

Private Cloud

- **Compute Server and Storage Server :**

Your Order

	Product	Unit Price	Quantity	Subtotal
	RAX XH4-21S4 (My System February 24th, 4:44 pm EST) Thinkmate Config ID 704828 Intel® C741 Chipset - 1U - 4x 3.5" Hybrid - Dual 1-Gigabit Ethernet (RJ45) - 1600W Redundant **2 x** Intel® Xeon® Gold 6430 Processor 32-Core 2.1GHz 60 MB Cache (270W) **16 x** 16GB PC5-38400 4800MHz DDR5 ECC RDIMM 10TB SATA 6.0Gb/s 7200RPM - 3.5" - Seagate Exos X18 Series FastFormat™ (512e/4Kn) Broadcom NetXtreme 100-Gigabit Ethernet Network Adapter P2100G - PCIe 4.0 x16 - 2x QSFP56 **2 x** AC Power Cord (North America), C13, NEMA 5-15P, 2.1m CAB-AC Ubuntu Linux 22.04 LTS Server Edition (64-bit) Thinkmate® ISO 9001 Certified Assembly, Testing, and Quality Control Air Freight Charge Thinkmate® System Badge - 1.75" x 0.4375" Thinkmate® 3 Year Depot Warranty (Return for Repair) Reconfigure Add A Spares Kit	$11,235.00	2500 Remove	$28,087,500.00
	STX-JB JE106-0420-SAS3 (My System February 22nd, 10:30 pm EST) Thinkmate Config ID 704424 Thinkmate® STX-4244 4U Chassis - 106x 3.5" SAS Drives - 2000W Redundant Power 100 x 20TB SAS 3.0 12.0Gb/s 7200RPM - 3.5" - Seagate Exos X20 Series FastFormat™ (512e/4Kn) I have an existing Host Server or Adapter **2 x** IEC320 C14 to C19 Power Cable - 14AWG - 250V/15A - 4ft / 1.2M (TAA Compliant) Thinkmate® ISO 9001 Certified Assembly, Testing, and Quality Control Thinkmate® 3 Year Depot Warranty (Return for Repair) Reconfigure Add A Spares Kit	$52,332.00	24 Remove	$1,255,968.00
			Update	$29,343,468.00

- **Network Switches :**

https://www.serversupply.com/NETWORKING/SWITCH/32%20PORT/MELLANOX/MSN2700-CS2FC_284862.htm?

Assuming there are 3 levels of switches. Level 0 is the top most layer with 1 switch and level 1 with 2 switches which acts like a medium between root and the actual instances and level 2 has the actual instances or systems.

The below network switch has 32 ports.

By calculating it with instances + level 0 (1 switch) + level 1 (2 switches) we get 83 switches. We can adjust the storage server connection here itself by connecting them to these switches randomly.

** Image may not exactly match product **

Mellanox MSN2700-CS2FC Spectrum Based 100GbE 1U Open Ethernet Switch

Part Number: MSN2700-CS2FC

BRAND: **MELLANOX** | **More NETWORKING from MELLANOX**

$5,950.00

~~$7,000.00~~

You Save: $1,050.00 15% OFF

Capacity: 32 PORT

Quantity :

− 1 + Read more? Terms and Conditions

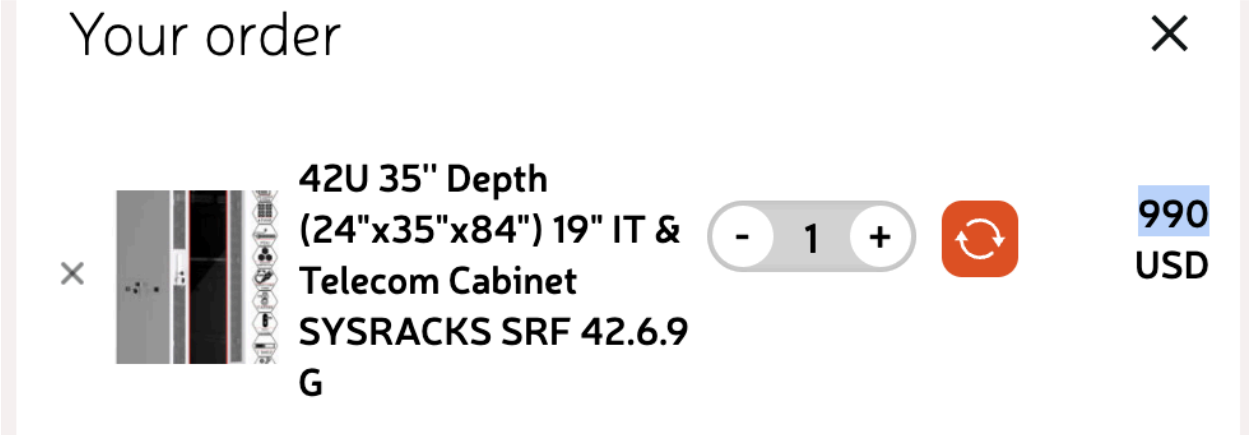
Add to Cart Quote

- **Network Cables :**

10Gtek for Mellanox MCP7H00-G002 100Gb/s to 2x50GbE (QSFP28 to 2xQSFP28) Direct Attach Copper Splitter Cable, Breakout Passive Copper — **$41.99**

Only 1 left in stock - order soon.
Eligible for FREE Shipping
This is a gift Learn more
Size: 2m
Style: 100G Q-2Q
Color: For Mellanox
Qty: 1 | Delete | Save for later | Share

- **Racks :**



- **Electric Power:**

In Region - ohio :
Power cost = 15.74 cents/kW

Compute Servers =
- **BareBone =** 1 * 30W => **30W** => 30W/1000 => **0.03 kWh**
- **CPU =** 2 * 270W => **540W** => 540W/1000 => **0.54 kWh**
- **Memory =** 16 * 5W => **80W** => 80W/1000 => **0.08 kWh**
- **Hard Drive =** 10 * 12.5W => **125W** => 125W/1000 => **0.125 kWh**
- **AC Power Cord =** 2 * 2W => **4W** => 4W/1000 => **0.004 kWh**

Total W for hour = **804W** and when its converted to kW, Then it is = 805W/1000 => **0.804kWh**

The value for **2500** instance = 0.804kWh * 2500 **=> 2010 kWh**

Storage Servers =

- **STX -4244 4U - Chassis :** 1 * 250 W = **250W** => 250W/1000 => **0.25kWh**
- **2000 W Redundant Power Supply :** 1 * 1800 **=> 1800W** => 1800W/1000 => **1.8kWh**
- **HDD Seagate Exos X20 Series :** 100 * 10.5 **= 1050W** => 1050W/1000 => **1.05kWh**
- **IEC c14 to c19 Power cable :** 2 * 2 **= 4W** => 4W/1000 => **0.004kWh**

The value for 1 server in W per hour = **2204W** and when its converted to kW,
Then it is = 2204W/1000 => **2.204kWh**

The value for 24 storage servers = **24 * 2.204kWh => 52.896 kWh**

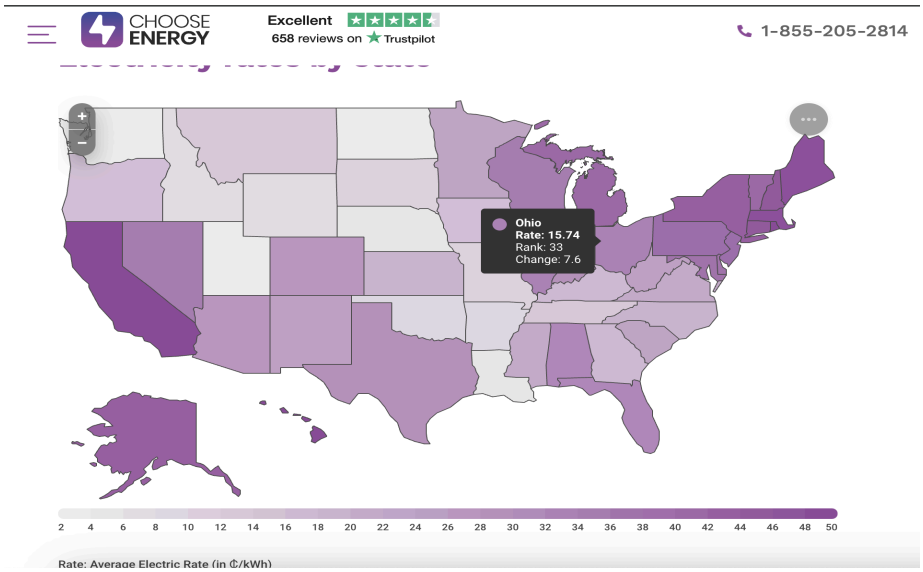
- **Network Switches : 150W**

=> 150W/1000 => **0.15 kWh**
The total network switches are **83** Then the total kWh is 0.15kWh * 83 => **12.45kWh**

- **Network Cables:**

2500 instances + 80 (for network switches) + 24 (for storage servers) + 2 (connecting to higher level) = **2,606**

Total power consumption = 2010 kWh + 52.896 kWh + 12.45kWh => 2075.346 **=> ~2075.35**



- **<u>Cooling:</u>**

Similar to Electric power

- **Administration :**

Given that, there should be 1 person for 500 instances and let's assume about $ 60,000 fee per year. Then calculating it for 5 years term would be
2500/ 500 => 5 persons
And storage servers = 1 persons
Total no of admins = 6

Total cost = 60,000 * 6person * 5 years = > $ 1,800,000.0

Configuration - 1 Public cloud

For CPU and instances:

General Purpose

Compute Optimized

Memory Optimized

Accelerated Computing

Storage Optimized

HPC Optimized

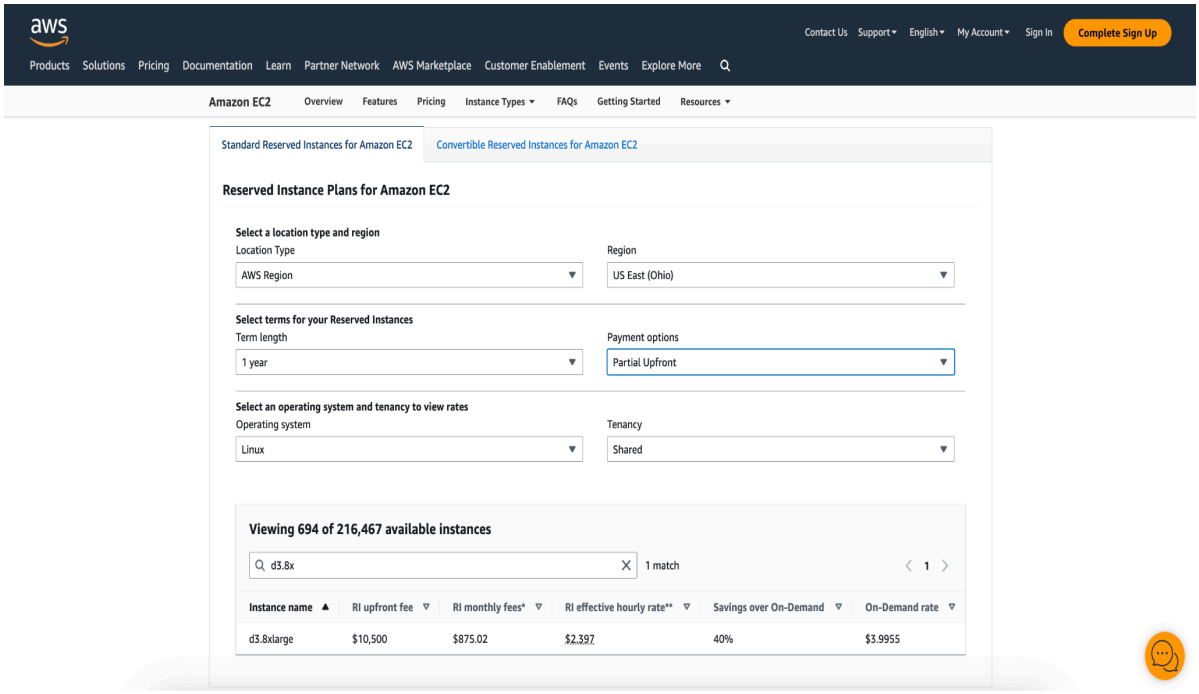
Instance Features

Measuring Instance Performance

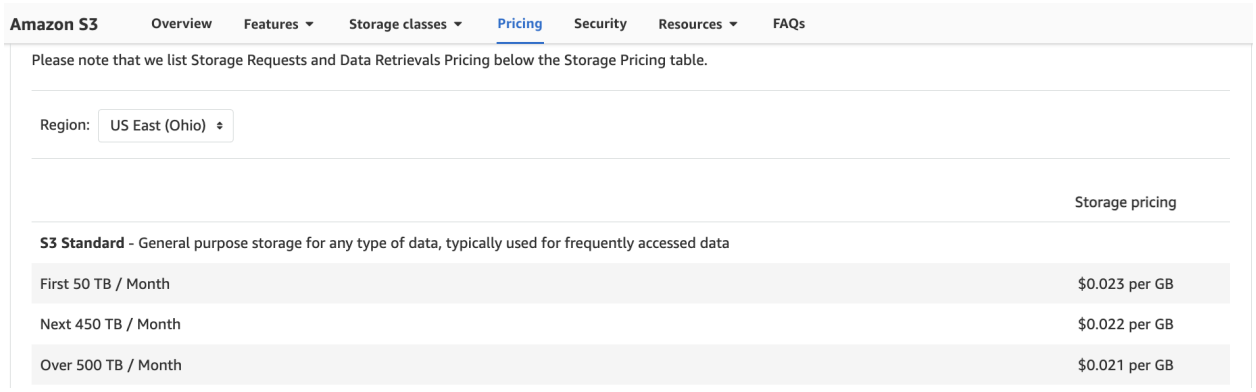
Instance Size	vCPU	Memory (GiB)	Instance Storage (TB)	Aggregate Disk Throughput (MiB/s)	Network Bandwidth (Gbps)***	EBS Bandwidth (Mbps)
d3.xlarge	4	32	3 x 2 HDD	580	Up to 15	850
d3.2xlarge	8	64	6 x 2 HDD	1,100	Up to 15	1,700
d3.4xlarge	16	128	12 x 2 HDD	2,300	Up to 15	2,800
d3.8xlarge	32	256	24 x 2 HDD	4,600	25	5,000

*128k block sizes, sequential read and write (rounded to nearest 100 except for xlarge)

Pricing for Ec2 :



Pricing for S3 :



Configuration - 2 - Private Cloud

- **Compute server :**

Mac mini 1 $1,999.00

Pay 0% APR for 12 months: $166.58/mo.

Hide product details Remove

Hardware

- Apple M2 Pro with 10-core CPU, 16-core GPU, 16-core Neural Engine
- 32GB unified memory
- 1TB SSD storage
- 10 Gigabit Ethernet
- Four Thunderbolt 4 ports, HDMI port, two USB-A ports, headphone jack

Software

- Photos, iMovie, GarageBand
- Pages, Numbers, Keynote
- macOS
- Accessory Kit

- **Network switches**

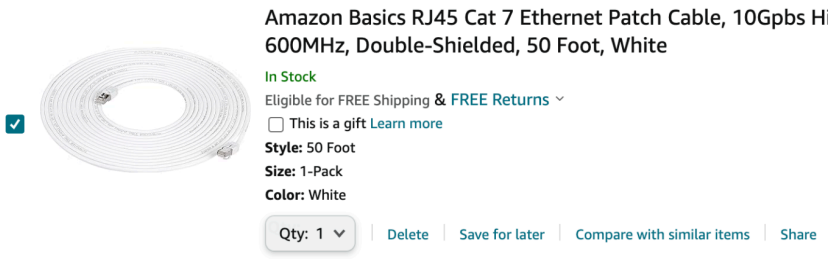
TP-Link 48-Port Unmanaged Gigabit Ethernet Switch, Steel Case, 19-inch Rack-Mount(TL-SG1048) **$238.95**

Only 10 left in stock - order soon.
Shipped from: The Factory Depot
Gift options not available. Learn more
Style: Rackmount
Size: 48-Port Gigabit

Qty: 1 | Delete | Save for later | Compare with similar items | Share

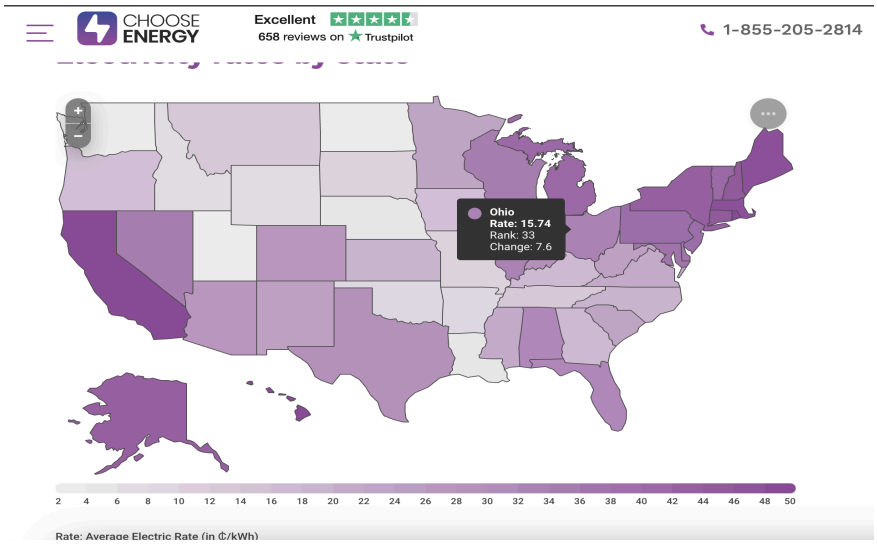
The total number of network switches are
=> (1000 / 48) + 2 (in level 1) + 1(in level 0)
=> 24 switches

- **Network Cables**



The network cables required are
=> 1000 systems + 24 switches
=> 1024 cables

- **Electric Power and cooling :**



Assuming the system is situated in Ohio.
Electric consumption per hour **150 W/hr**
Converting it to kW by using
150Wh /1000 => 0.15kWh
The power consumption for 5 year is
=> 0.15kWh * (40hrs/week) * (48 weeks) * 5 years
=> **1440 kW**
Power cost = 15.74 cents/kW
The calculation for 1000 mac mini systems and its power cost is
=> 1440 * 1000 systems * 0.1574kWh
=> **$ 226,656**

- **Network Switches:**

There are about 24 switches in total for configuration-2.
The power consumption per switch is 32.2W.
Now convert it to KiloWatt, then
=> 32.2W/1000

=> 0.0322kWh

Now calculating it to 24 switches, then we get
=> 24 (switches) * 0.0322kWh * (40hrs/week) * (48 weeks) * 5 years * 0.1574kWh (In region Ohio)
=> **$ 1167.73**

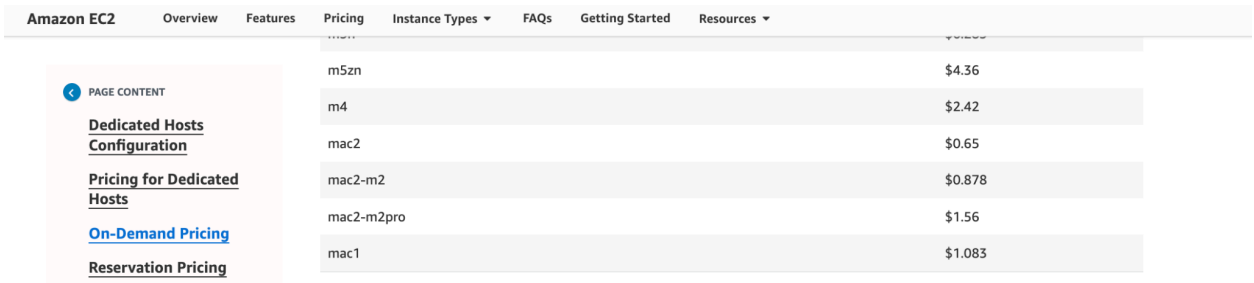
The total power consumption is
=> $ 226,656 + $ 1167.73
=> $ 227,823.73

- **For cooling**

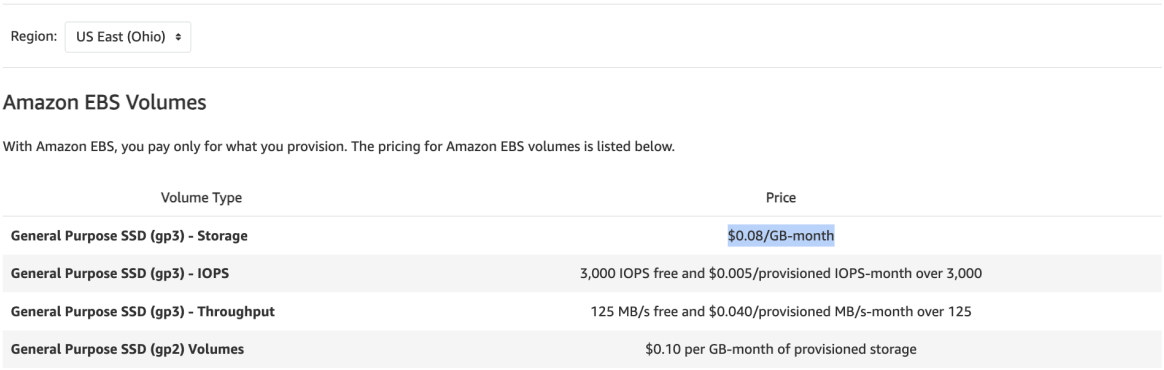
The value is the same as Electric power.

Configuration - 2 Public cloud

EC2 price :



EBS Price:



Configuration 3:

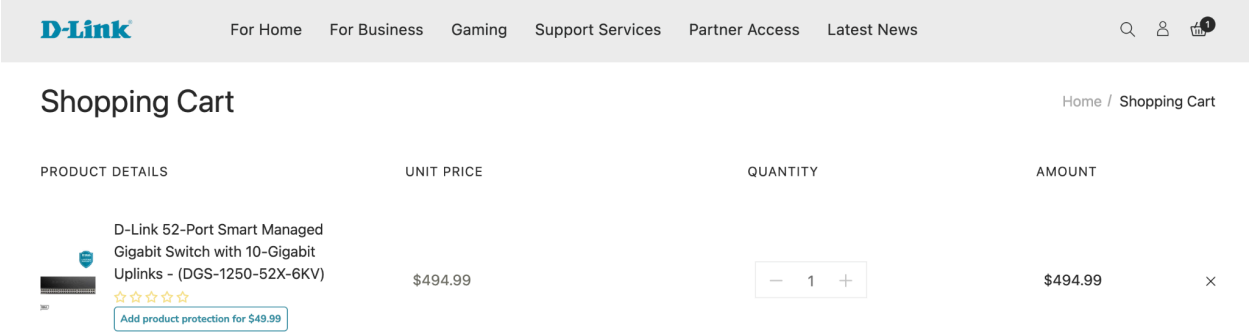
Private Cloud :

- **Computing server:**

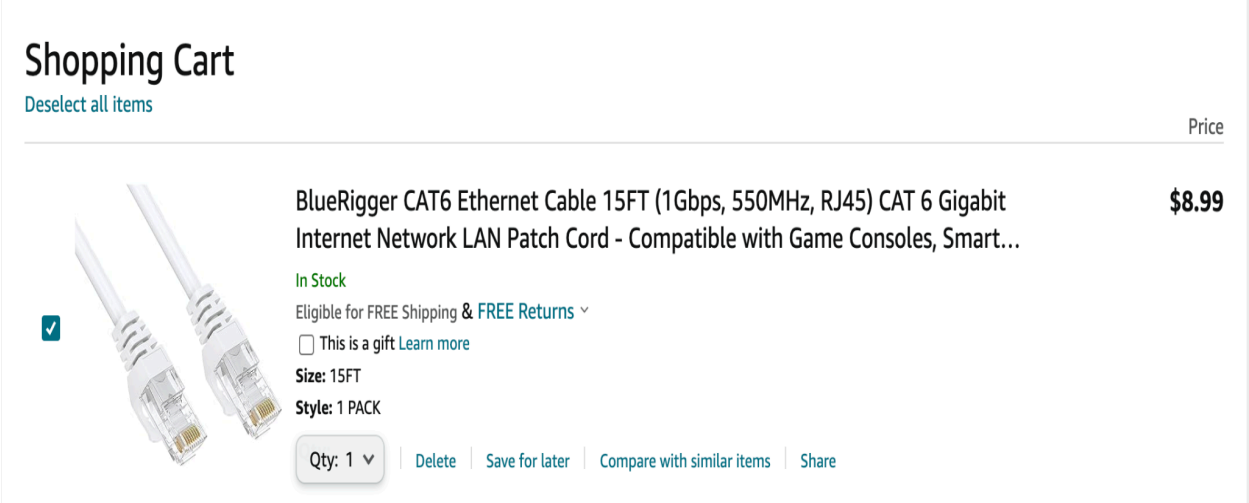
Your Order

	Product	Unit Price	Quantity	Subtotal
	GPX XS12-24S3-10GPU (My System February 26th, 8:08 pm EST) Thinkmate Config ID 705450 4U GPU Server - 12x 3.5" SATA/SAS - 10x GPUs Dual Root - Dual 10-Gigabit Ethernet - 2200W 2+1 Redundant **2 x** Intel® Xeon® Silver 4309Y Processor 8-Core 2.8GHz 12MB Cache (105W) **16 x** 8GB PC4-25600 3200MHz DDR4 ECC RDIMM 1.0TB SATA 6.0Gb/s 7200RPM - 2.5" - Seagate Exos 7E2000 Series (512e) **8 x** NVIDIA® RTX A5000 - 24GB GDDR6 - PCIe 4.0 x16 - Active Cooling (4xDP) Broadcom NetXtreme 1-Gigabit Ethernet Network Adapter - PCIe 2.0 x1 - 2x RJ45 **3 x** IEC320 C14 to C19 Power Cable - 14AWG - 250V/15A - 4ft / 1.2M (TAA Compliant) Ubuntu Linux 22.04 LTS Server Edition (64-bit) Thinkmate® ISO 9001 Certified Assembly, Testing, and Quality Control Thinkmate® 3 Year Advanced Parts Replacement Warranty (Zone 0) Reconfigure Add A Spares Kit	$31,126.00	165 Remove	$5,135,790.00
			Update	$5,135,790.00

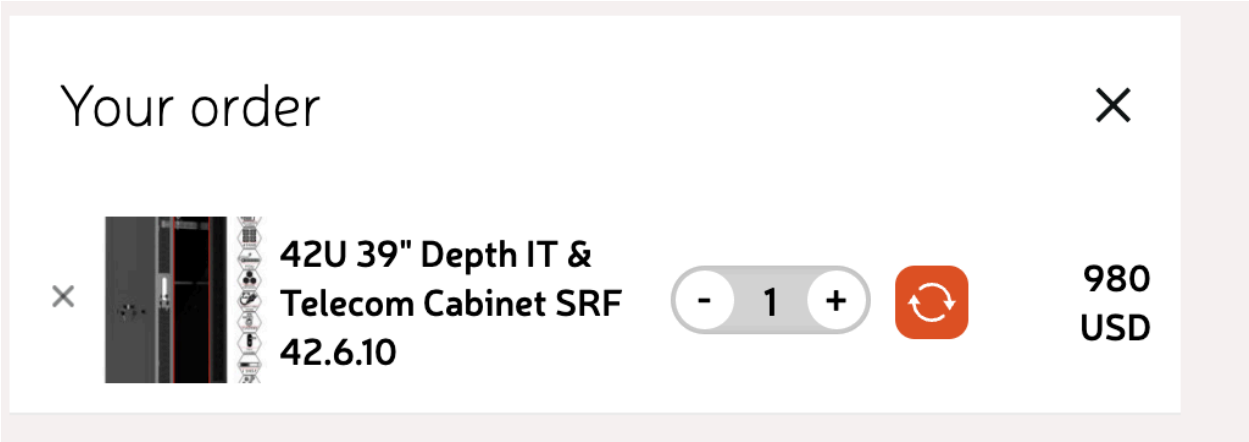
- **Network Switches**



- **Network Cable:**



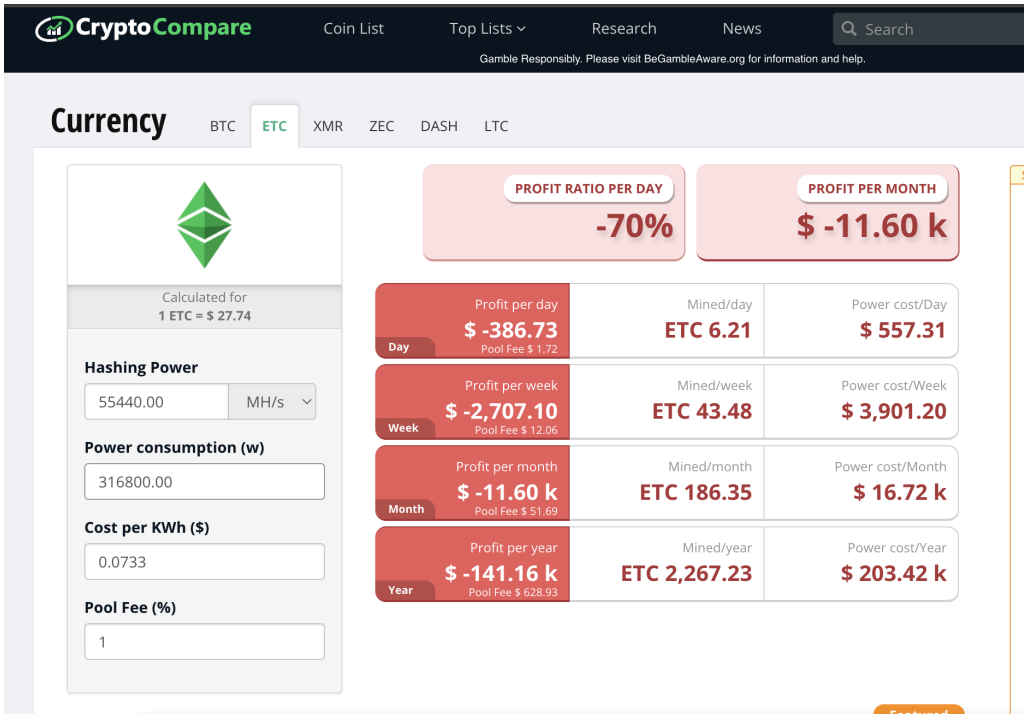
- **Racks:**



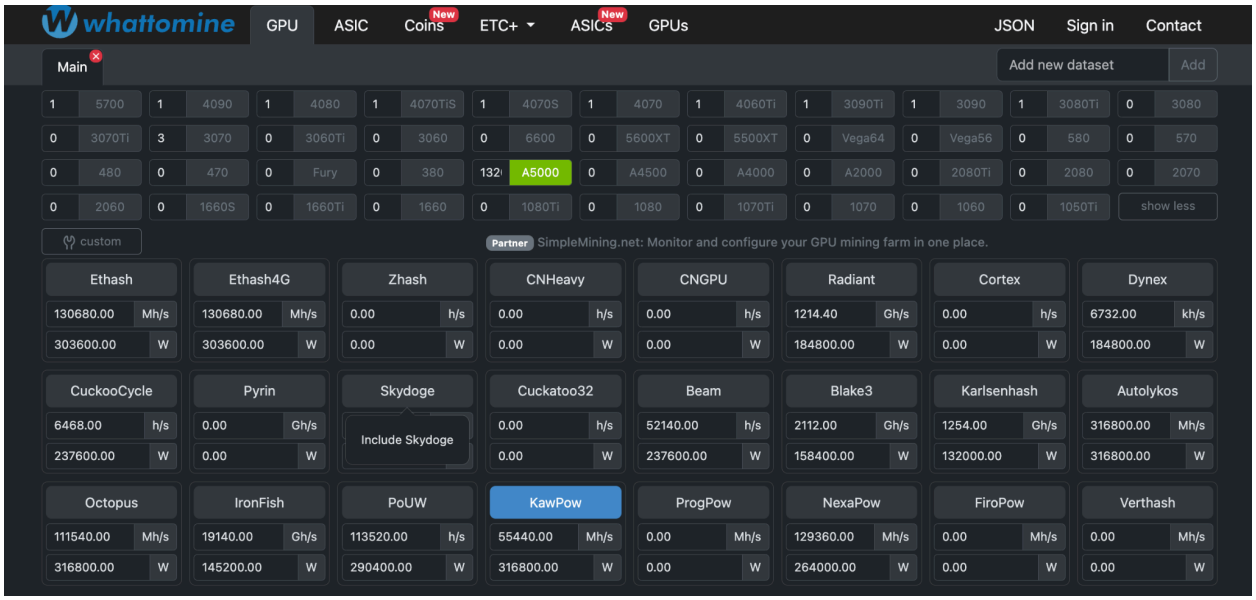
- **Electric Power**

North Dakota	7.33 ¢/kWh	8.25 ¢/kWh	-11.2%

- **Getting the profit Ratio after mining**



- **The power for all systems**



- **Power Consumption :**

The business cost of power in kWh is 7.33 cents/kWh = > 0.0733 $/kWh
Assuming the quantity as 165. Then, there are 165 * 8 (cores) = 1320
There are **1320** cores in total.
The power needed for 1300 cores is 316800.00 W and 55440 MH/s.

Now converting W/hr to kW/hr :
=> 316800.00 /1000
=> **316.8 kWh**

Now calculate it to

- **Compute Servers :**
    - **BareBone =** 1*1800 => **1800W** => **1.8kWh**
    - **CPU =** 2 * **105 * = 210 W => 0.21kWh**
    - **Memory =** 16 * 5W => **80W** => 80W/1000 => **0.08 kWh**
    - **Hard Drive =** 1 * 12.5 W => **12.5W** => **0.0125 kWh**
    - **Network Adaptor =** 1 * 5W => **5W** => 5W/1000 => **0.005 kWh**

The total of compute server is **2177.5W => 2.177 kWh**
Now Calculate it for quantity = 165
Then the total power consumption for compute servers :
=> 165 * 2.177 kWh
=> 359.205 kWh

- **Network Switches = 150 W**

=> 150W/1000 => **0.15 kWh**
The total network switches are **5** Then the total kWh is 0.15kWh * 5 => **0.75 kWh**

The total power consumption is
=> 359.205 kWh + 0.75 kWh + 316.8 kWh
=> **676.755 kWh**

The total power consumption for 5 year term is
=> 676.755 kWh * 0.0733 $/kWh * 24 hrs * 365 days * 5 years
=> 2,172,748.9977
=> ~ $ 2,172,749

The profit per year is $ 141,160.
Then, for a 5 year term, it will be
=> $ -141,160 * 5
=> **$ -705,800**

- **<u>Cooling:</u>**

Similar to Electric power
Public Cloud :

Select a location type and region

Location Type: AWS Region

Region: US East (Ohio)

Instance Family: All

p3.16xlarge — 1 match — 1

Instance Type	Linux/UNIX Usage	Windows Usage	Instance Family
p3.16xlarge	$2.5962	$5.392	GPU Instances - Current Generation

* Cluster GPU Instances are not available in all regions.

- Up to 8 NVIDIA Tesla V100 GPUs, each pairing 5,120 CUDA Cores and 640 Tensor Cores
- High frequency Intel Xeon Scalable Processor (Broadwell E5-2686 v4) for p3.2xlarge, p3.8xlarge, and p3.16xlarge.
- High frequency 2.5 GHz (base) Intel Xeon Scalable Processor (Skylake 8175) for p3dn.24xlarge.
- Supports NVLink for peer-to-peer GPU communication
- Provides up to 100 Gbps of aggregate network bandwidth.
- EFA support on p3dn.24xlarge instances

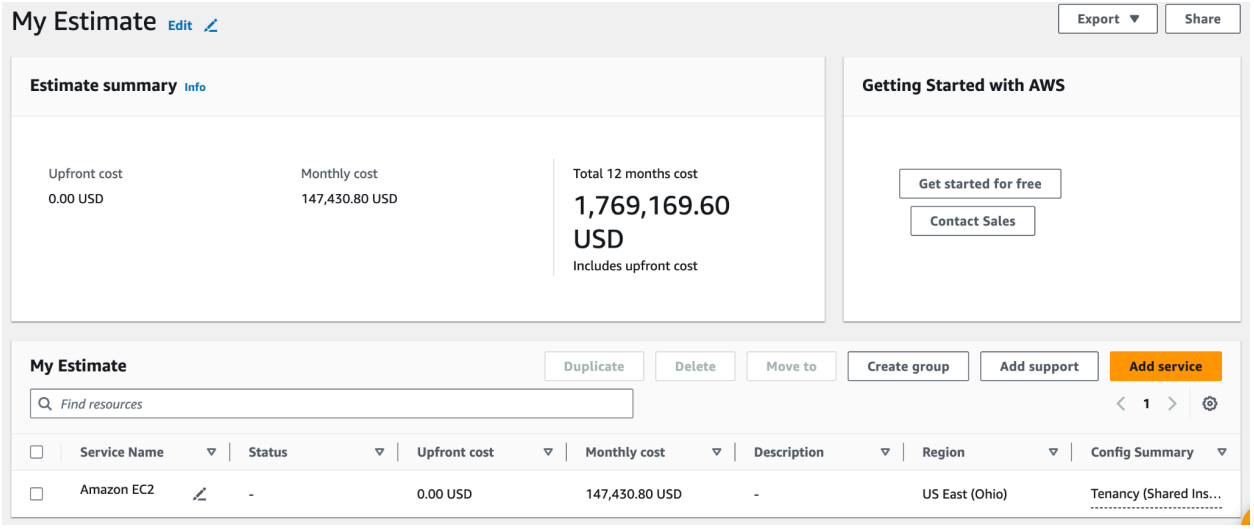
Instance	GPUs	vCPU	Mem (GiB)	GPU Mem (GiB)	GPU P2P	Storage (GB)	Dedicated EBS Bandwidth (Gbps)	Networking Performance (Gbps)***
p3.2xlarge	1	8	61	16	-	EBS-Only	1.5	Up to 10
p3.8xlarge	4	32	244	64	NVLink	EBS-Only	7	10
p3.16xlarge	8	64	488	128	NVLink	EBS-Only	14	25

How profitable is mining with NVIDIA Tesla V100-PCIE-16GB?

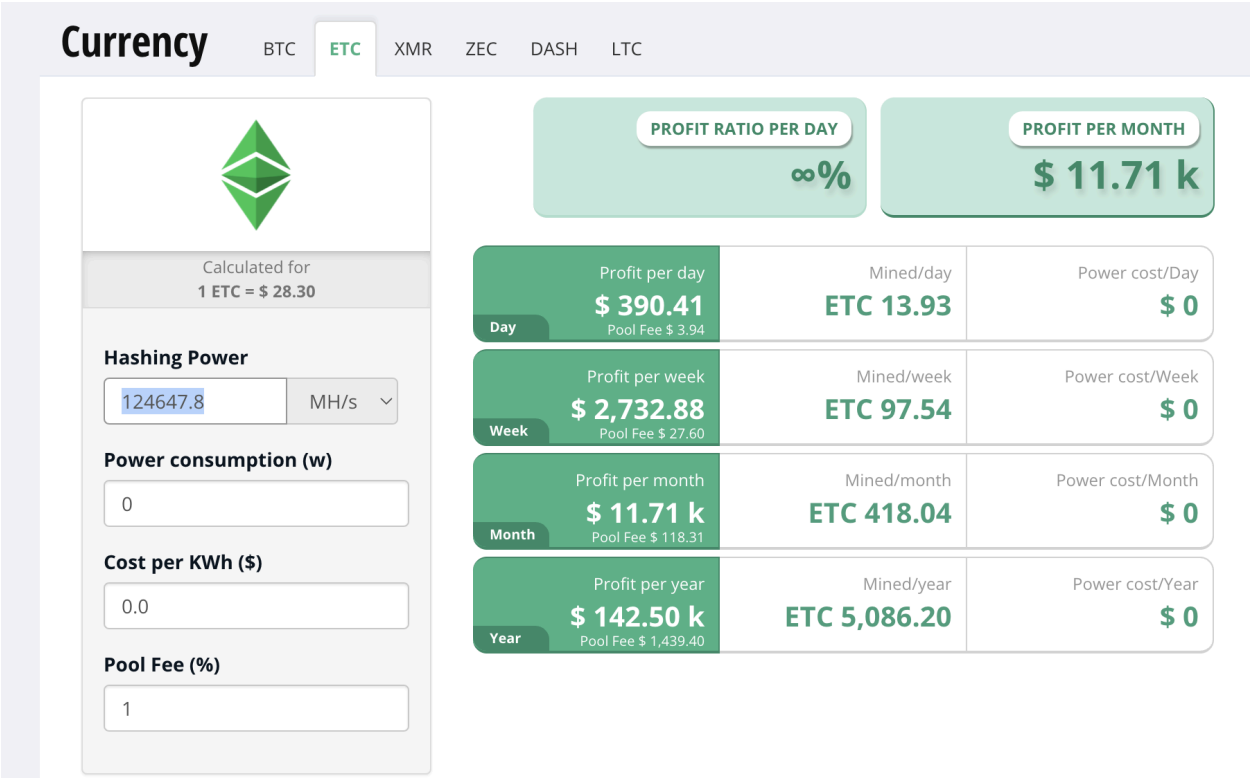
NVIDIA Tesla V100-PCIE-16GB can generate more than 27.35 USD monthly income with a 48.15 MH/s hashrate on the RVN - KawPow (NBMiner) algorithm.

Algorithm	Hashrate	Monthly Income	Monthly BTC Income	Monthly USD Income
RVN - KawPow (NBMiner)	≈48.15 MH/s	≈1057.23859935 RVN	≈0.00048633 BTC	≈27.35 USD
FIRO - FiroPow (T-Rex)	≈50.98 MH/s	≈14.46817598 XZC	≈0.00047066 BTC	≈26.46 USD
ETC - Ethash (GMiner)	≈94.43 MH/s	≈0.30704690 ETC	≈0.00015444 BTC	≈8.69 USD
ETH - Ethash (Phoenix)	94.07 MH/s	~~0.04369723 ETH~~	~~0.00348333 BTC~~	~~70.14 USD~~
ZEC - Equihash (EWBF)	≈947.17 H/s	~~≈0.00878622 ZEC~~	~~≈0.00000597 BTC~~	~~≈0.26 USD~~

- Instance Type: p3.16xlarge
- Term length : 5 year
- Operating system : Linux
- Region : US East (Ohio)
- Total number of instances are 165



The AWS spot instance cost is $ 1,769,169.60.
Now calculating it to 5 year term
=> 1,769,169.60 * 5 years
=> $ **8,845,848.00**



The computation to get Hashing power is = 165 * 8* 94.43 MH/s => 124647.8 MH/s. This value is for 1 year.
The profit per year is $ 142,500.
Then calculating it for 5 years term will be about
=> 142,500 * 5
=> **$ 712,500**

	Configuration 3
Public Cloud Mining Profit over 5 years	$ - 705,800
Private Cloud Mining Profit over 5 years	$ 712,500

(Table 3: Summary table comparing the profits with configuration #3 between the public and private cloud over a 5-year period)

Conclusion:

- **Configuration 1** : In this configuration, the private cloud is the best choice because the private cloud cost is **less than 25%** of the public cloud when we compare it to the 5-year term. Seeing these, I suggest buying a private cloud.

- **Configuration 2** : In this configuration, the private cloud is the better choice than the public because the private cloud cost is **~1.7 times** cheaper than the public cloud, in a period of 5-year term. Seeing these, I would like to suggest purchasing a private cloud.

- **Configuration 3:** In this configuration, the public cloud is the better choice than the private because the public cloud is in positive profit rather than private

	Public Cloud	**Private Cloud**	**Cloud Selection**
Configuration - 1	$ 267,700,752.00	$ 63,122,595.38	Buy Private
Configuration - 2	$ 4,166,160.00	$ 2,477,482.06	Buy Private
Configuration - 3	$ 712,500	$ - 705,800	Rent Public

(Table-4 Comparing all Configurations)

References :

1. https://aws.amazon.com/ec2/instance-types/
2. https://aws.amazon.com/ec2/spot/pricing/
3. https://aws.amazon.com/s3/pricing/
4. https://www.serversupply.com/NETWORKING/SWITCH/32%20PORT/MELLANOX/MSN2700-CS2FC_284862.htm
5. https://medium.com/coinmonks/new-aws-instance-that-makes-eth-mining-profitable-1dd87183cce7
6. https://www.amazon.com/2xQSFP28-Splitter-Breakout-Mellanox-MCP7H00-G001/dp/B088ZG24HL?th=1
7. https://www.betterhash.net/NVIDIA-Tesla-T4-mining-profitability-26440860.html
8. https://www.cryptocompare.com/mining/calculator/etc
9. https://calculator.aws/#/estimate
10. https://www.chooseenergy.com/electricity-rates-by-state/
11. https://www.thinkmate.com/order
12. https://whattomine.com/coins
13. https://shop.us.dlink.com/
14. https://www.amazon.com/gp/cart/view.html?ref_=nav_cart
15. https://sysracks.com/catalog/racks-by-size/42u/
