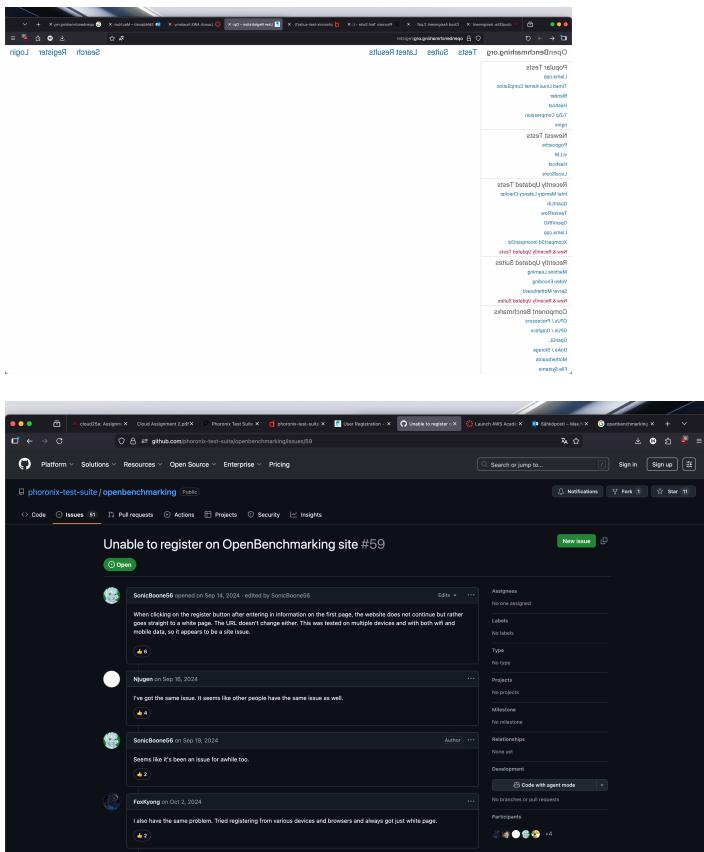


Cloud Computing Task 2

Step 1: Get an idea of what is the phoronix test suite and what it is used for

It is an open-source testing and benchmarking site. I read the text about the Linux testing manual page and then tried to create an account on benchmarking.org but when I pressed register I found an empty page and when I tried to login it did not find the account I just created. Tried googling the issue and tried a temp mail but people have been having this same issue since 2023 apparently, so not really giving me much hope. The website just goes completely blank after filling in the login details not even mentioning an email about the confirmation link.



The websites own bug report page has had this issue at least since September of last year, with no fix nor mention from the owner.

After two days of troubleshooting and two accounts I got in with a vpn on the account [asfenfhafsa](https://openbenchmarking.org/user/asfenfhafsa). This wasn't as straightforward either, as it was my second account created on a vpn, since the first was created on another pc, and I now worked on my laptop, so the website logically wouldn't let me log into my first account.

This is the link to my account: <https://openbenchmarking.org/user/asfenfhafsa>

Step 2 Read about them, chose t3.small, c5-large and m5.large.

The t3.small was a free option and clearly the weakest of them, as it was explained as a fitting instance for micro-services which have moderate CPU usage with temporary spikes.

The C5.large was advertised as being a compute optimized instance with cost-effective high performance. I chose it since this was one of the goals of the comparison and I hoped that it would thus excel at it.

The m5.large was the middle of the pack choice, being a general-purpose instance which offered a balance in the resources needed for different workloads. Thus, I expected it to be good at everything but probably also a bit expensive since it had to be ok at multiple different things.

Step 3:

Instances (3) Info									
Last updated less than a minute ago Connect Instance state ▾ Actions ▾ Launch instances ▾									
<input type="text"/> Find Instance by attribute or tag (case-sensitive) All states ▾ < 1 > 									
	Name ▾	Instance ID	Instance state ▾	Instance type ▾	Status check	Alarm status	Availability Zone ▾	Public IPv4 DNS ▾	Public IPv
<input type="checkbox"/>	M-VM	i-06c9e865a3ef37c52	Running	m5.large	Initializing	View alarms +	us-east-1d	ec2-3-81-35-195.comp...	3.81.35.19
<input type="checkbox"/>	C-VM	i-0d45b3c47d0613381	Running	c5.large	Initializing	View alarms +	us-east-1b	ec2-13-221-105-83.co...	13.221.10
<input type="checkbox"/>	T-VM	i-030f277470d237afc	Running	t3.small	Initializing	View alarms +	us-east-1c	ec2-54-221-124-236.co...	54.221.12

I launched all three at once, even though I later learned why this was not a good idea. I did it the same as in the previous task, so http allowed, chose ubuntu and made a private key which was the same for all of them.

Step 4: Launch a VM

I started with the t3.small VM but this was clearly a mistake looking back since it lead me to be stuck on the first test for a long while

Step 5: Packages installation

I ran into some problems after the sudo apt-get update so I tried the steps in the notes. These seem to have worked as I now managed to get in with the phoronix-test-suite command.

```

enterprise-setup
network-info
network-setup
user-config-reset
user-config-set

RESULT ANALYSIS

executive-summary [Test Result]
result-file-confidence [Test Result]
result-file-stats [Test Result]
wins-and-losses [Test Result]

PHOROMATIC

start-phoromatic-server

RESULT VIEWER

start-result-viewer

ubuntu@ip-172-31-26-164:~$ 

```

Step 6: Install the following test suites

I tried the pts/openssl but I got a notification that I had missing dependencies, I tried the third command which was to attempt to re-install them. It said 3.5 minutes wait time but took way longer with no way of knowing if it did anything. Finally I checked what tests I had installed and all six were there so I thought I was ready.

Step 7 Login and run tests

```

DOMDocument::createTextNode(): Passing null to parameter #1 ($data) of type stri
ng is deprecated in /usr/share/phoronix-test-suite/pts-core/objects/nye_Xml/nye_
XmlWriter.php:81

If you have not already registered for your free OpenBenchmarking.org account, y
ou can do so at https://openbenchmarking.org/
Once you have registered your account and clicked the link within the verificati
on email, enter your log-in information below.

OpenBenchmarking.org User-Name: asfenfhafsaas
OpenBenchmarking.org Password:
[8192] str_replace(): Passing null to parameter #2 ($replace) of type array|
string is deprecated in phodevi:623

The Account Has Been Setup.

ubuntu@ip-172-31-26-164:~$ 

```

I managed to get logged in with my credentials and thought I was ready to run the tests but oh was I wrong.

Step 8: Execute the 6 benchmarks

```

ubuntu@ip-172-31-26-164:~$ phoronix-test-suite benchmark pts/openssl pts/stream
pts/encode-mp3 pts/apache pts/network-loopback pts/john-the-ripper

```

After sitting for around 45 minutes on one test I joined the VM from another terminal and checked the CPU usage, which was 2%, so one of the tests never compiled correctly so I had to terminate it. I also noticed that my first test was not getting a result so I decided to try the m5.large machine instead and maybe use the image I would create from it for the t3. In hindsight this was the way to go forward since I couldn't have expected that the t3 would throttle at the first test, which was what threw me off.

M5.large

Started with sudo apt-get update and then did all the commands in the instructions:

sudo apt-get install php, sudo apt-get install php-xml php7.4-xml, sudo apt-get install unzip, wget http://phoronix-test-suite.com/releases/repo/pts.debian/files/phoronix-test-suite_10.2.2_all.deb, sudo dpkg -i phoronix-test-suite_10.2.2_all.deb.

I for some reason could still not download the tests so after some googling, I ran:

sudo apt-get install unzip php php-xml php-zip

This fixed the issue of not being able to download them. A couple tests needed some missing dependencies but waiting them out worked this time and so I tried the testing command:

phoronix-test-suite benchmark pts/openssl pts/stream pts/encode-mp3 pts/apache pts/network-loopback pts/john-the-ripper

I selected all the necessary algorithms and the tests started, slowly but surely, I got it done without errors this time and now it was time to create an image of the completed run so that I wouldn't have to redo everything three times. The first results were uploaded to this link.

<https://openbenchmarking.org/result/2509219-ASFE-CC25AUT39>

Next, I created an AMI from the m5.large machine which I then used to launch a new t3.small instance.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv6
<input type="checkbox"/> M-VM	i-06c9e865a3ef37c52	Running	m5.large	3/3 checks passed	View alarms	us-east-1d	ec2-3-80-254-109.com...	3.80.254.1
<input checked="" type="checkbox"/> T3-VM	i-0f02f024e77e6ff0c	Running	t3.small	0/0 checks passed	View alarms	us-east-1c	ec2-54-160-241-159.co...	54.160.24

Now connected to the new t3.small machine I found the test id on the openbenchmarking results page which was: **phoronix-test-suite benchmark 2509219-ASFE-CC25AUT39**

Using this on the new VM I saw that it said 1 of 7 tests which I was a bit confused about since there were 6 on the previous one, but one extra is better than missing one, so I let it run. Looking at the results of the first run I can see that the OpenSSL ran twice, which made it seven instead of six because it ran sign/s and verify/s.

The first test which was stream seems to fail on this machine no matter what since it did that the first time I ran everything on the t3.small before I changed to the m5.large.

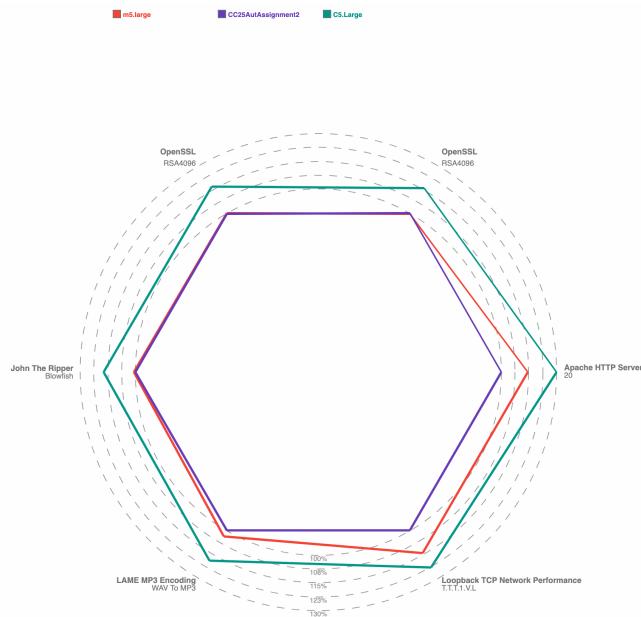
After about an hour I had the next results uploaded on

<https://openbenchmarking.org/result/2509216-ASFE-250921976>

And for some reason the t3.small is named CS25AutAssignment2, I probably didn't notice that it asked for the specific name so it was incorrectly named.

Then I took the ID of the comparison between the first two tests and ran the third one, for which I chose c5.large. I did all the prior commands the same way as on the t3.small machine and had no issues. It estimated the time to be way longer than the other two but still finished in the same 30-45 minute window. <https://openbenchmarking.org/result/2509218-ASFE-250921640>

And now for the results/comparison



CC25AutAssignment2			
ptsli	m5.large	CC25AutAssignment2	C5.Large
stream: Add	13264.9		13705.2
network-loopback: Time To Transfer 10GB Via Loopback	17.400	19.856	16.102
john-the-ripper: Blowfish	1378	1365	1602
encode-mp3: WAV To MP3	13.968	14.478	12.184
openssl: RSA4096	234.4	235.3	272.4
openssl: RSA4096	15218.4	15150.1	17694.4
apache: 20	9231.60	8051.94	10493.12

OpenBenchmarking.org

As readily apparent in color in the results the C5.Large is the fastest of the bunch while the t3.small is nearly worst in every category, except sign/s and stream:add since it wouldn't run on it. I think it is since stream:add is a heavy test on the memory bandwidth that it throttled, which makes it the worst in that category as well. The exact results can be found on my user account so I will not copy paste them here, but to me the most interesting was that the m5.large had the worst sign/s.

Cost effectiveness of the different VM:s

T3.small is listed at 0.0208\$/h, M5.large is listed at 0.096\$/h and the C5.large at 0.085\$/h.

The cost-efficiency can be calculated by dividing the performance by the hourly rate, so I chose the stream to compare the RAM, the OpenSSL for the CPU and the Apache for the web workloads.

	T3.Small	C5.Large	M5.Large
Stream	-	161,235 $\frac{MB/s}{$/h}$	138,177 $\frac{MB/s}{$/h}$
OpenSSL (sign/s)	11312,500 $\frac{sign/s}{$/h}$	3204,706 $\frac{sign/s}{$/h}$	2441,667 $\frac{sign/s}{$/h}$
Apache	387112,500 $\frac{req/s}{$/h}$	123448,471 $\frac{req/s}{$/h}$	96162,500 $\frac{req/s}{$/h}$

So, cost effectively the t3.small clearly outshines the other two, purely since its scores were somewhat close, but the cost was a fraction of the other two. The fact that it failed the stream test however is not great. As expected, the all-around m5.large was the worst at cost effectiveness because of its high pricing.

It's hard to say what was new to me since I had launched VM:s before, we used AWS in the same way in the last task and I have experience with benchmarking machines. But when combining these three it was a completely new experience for me, and it felt like I learned a lot even though I had so many problems on the way. What surprised me most is the website we used. I don't think the it is suitable for professionals if they really ignore such a massive issue as account registration for over 2 years. It was extremely satisfying to finally get the first test results since it had taken me so many hours to just get to that point.