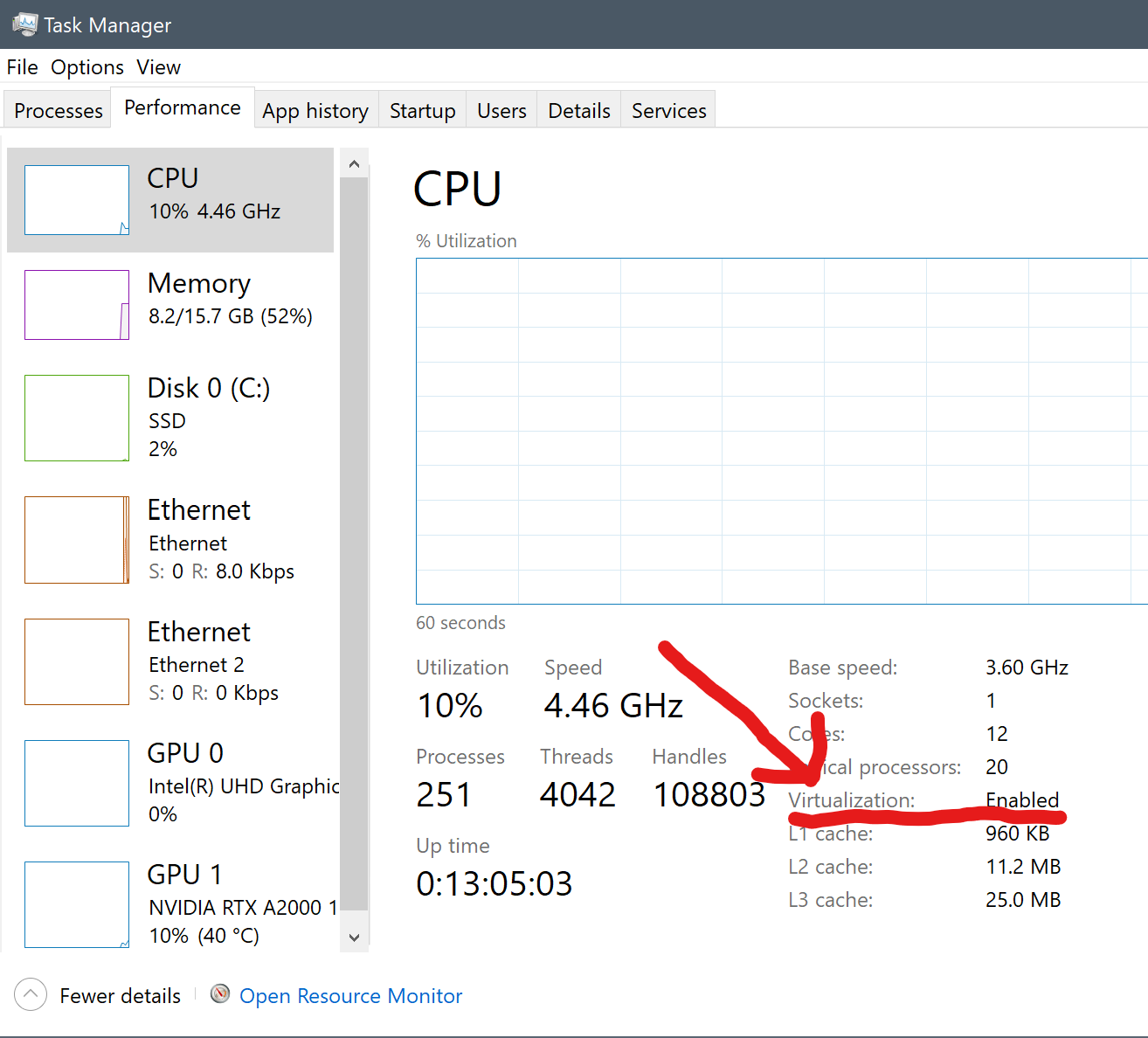
**Lab 1**

1. Check if your processor supports Intel/AMD virtualization technology. Enable Intel virtualization technology in BIOS if possible.



1. The cloud is almost everywhere in our lives now. What do you think are the fundamental reasons behind its success? Name three pros and three cons of cloud.

**Pros:**

**Scalability** – No need to purchase additional hardware to run online services, especially helpful for start-ups and small businesses planning expansion that may experience fluctuating traffic.

**Maintenance** – No need to have onsite server technicians building and maintaining infrastructure as that is provided in the cost of the cloud services.

**Accessibility** – Cloud servers can be set up, monitored, scaled up, scaled down and updated from anywhere in the world with internet. Allowing a Irish company for example to have local servers in America, Asia, Africa and Australia as well as Europe reducing latency for users on those continents without needing to set up dedicated server farms in those places.

1. What is the primary function of a hypervisor in virtualization?

* It creates and manages the virtual machines by abstracting hardware resources and allocating them to the virtual machines.

1. What is a virtual machine (VM)?

* It is a software emulation of a ‘real’ computer, it runs an operating system and applications just like any other computer but it is completely contained within software within your physical machine.

1. What are the benefits of using virtual machines?

* Security and testing: A virtual machine is closed off from the physical machine unless otherwise allowed access, if malware or malicious software is installed on a virtual machine it is cut off from the rest of the computer outside the VM.
* Resource utilization: Developers with powerful PC’s wishing to test their game can create a VM with less access to their PC’s hardware and see how it will run on a weaker machine.
* Backup and recovery: An isolated VM can store a save data that can be retrieved if necessary if something goes wrong on the ‘main’ computer.

1. List five use cases of virtual machines.

* Emulating legacy applications. E.g. old Nintendo games.
* Security. E.g. testing malware.
* Software development. E.g. playtest on weaker machine hardware.
* Cloud computing. E.g. running a Minecraft server on a VM.
* Operating system change. E.g. using Linux on a Windows PC

1. In virtualization, what is the guest operating system?
2. The main operating system running on the physical machine
3. The operating system installed on a virtual machine
4. The operating system running on a remote server
5. The operating system running on a mobile device

Answer = B

1. What does virtual machine isolation mean?
2. Virtual machines can communicate directly with the physical hardware.
3. Virtual machines share the same resources and cannot be isolated.
4. Virtual machines run independently and are isolated from each other and the host system.
5. Virtual machines can only be accessed locally.

Answer = C

1. What is the benefit of virtual machine portability?
2. It allows virtual machines to communicate with each other easily.
3. It ensures faster boot times for virtual machines.
4. It allows virtual machines to be moved between different physical machines with compatible hypervisors.
5. It reduces the need for hardware virtualization.

Answer = C

1. What is the purpose of cloning a virtual machine?

* Cloning a VM lets you create a copy of a another VM, which is good for quick deployments, backups, testing and scaling.