MODULE 4 COMMUNICATING

> **1** *Before reading the text, look up these words in a dictionary.*
>
> **a.** virtual
> **b.** actual
> **c.** trend
>
> **d.** overhead cost
> **e.** pooling
> **f.** spare

A. VIRTUALIZATION

Virtualization is the creation of a <u>virtual</u>, rather than <u>actual</u>, version of something, such as an operating system, a server, a storage device or network resources. While a **physical computer** in the classical sense is clearly a complete and actual machine, both *subjectively* (from the user's point of view) and *objectively* (from the hardware system administrator's point of view), a **virtual machine** is *subjectively* a complete machine (or very close), but *objectively* merely a set of files and running programs on an actual, physical machine which the user need not necessarily be aware of. Virtualization can be viewed as part of an overall <u>trend</u> in enterprise IT that includes

autonomic computing, a scenario in which the IT environment will be able to manage itself based on perceived activity and utility computing, in which computer processing power is seen as a utility that clients can pay for only as needed. The usual goal of virtualization is to centralize administrative tasks while improving scalability and overall hardware-resource utilization. With virtualization, several operating systems can be run in parallel on a single central processing unit (CPU). This parallelism tends to reduce <u>overhead costs</u> and differs from multitasking, which involves running several programs on the same OS. Operating system virtualization is the use of software to allow a piece of hardware to run multiple operating system images at the same time. Network virtualization is a method of combining the available resources in a network by splitting up the available bandwidth into channels, each of which is independent from the others, and each of which can be assigned to a particular server or device in real time. Storage virtualization is the <u>pooling</u> of physical storage from multiple network storage devices into what appears to be a single storage device that is managed from a central console. Server virtualization is the masking of server resources from server users. The intention is to <u>spare</u> the user from having to understand and manage complicated details of server resources while increasing resource sharing and utilization and maintaining the capacity to expand later.
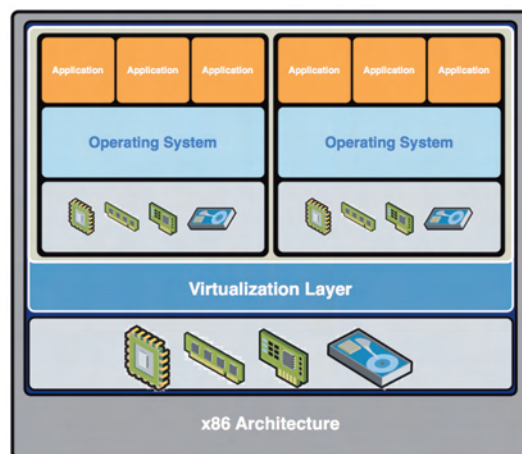
2 *Read the text and find the opposite of the following terms.*

1. virtual: ....
2. subjectively: ....
3. to increase: ....
4. single: ....
5. dependent: ....
6. easy: ....

**3** *Answer the following questions.*

1. What does virtualization mean?
2. What is the difference between a physical and a virtual machine?
3. What is the aim of virtualization?
4. What is the advantage of this system?
5. How does it differ from multitasking?
6. What is network virtualization?
7. What is the intention of server virtualization?

B. WHAT IS PLASMA?

The central element in a fluorescent light is plasma, a gas made up of free-flowing ions (electrically charged atoms) and electrons (negatively charged particles). Under normal conditions, a gas is mainly made up of uncharged particles. That is, the individual gas atoms include equal numbers of protons (positively charged particles in the atom's nucleus) and electrons. The negatively charged electrons perfectly balance the positively charged protons, so the atom has a net charge of zero.

If you introduce many free electrons into the gas by establishing an electrical voltage across it, the situation changes very quickly. The free electrons collide with the atoms,

How Atoms Emit Light
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Particles

Nucleus

1. A collision with a moving particle excites the atom.
2. This causes an electron to jump to a higher energy level.
3. The electron falls back to its original energy level, releasing the extra energy in the form of a light photon.

Light Photon

knocking loose other electrons. With a missing electron, an atom loses its balance. It has a net positive charge, making it an ion.

In plasma with an electrical current running through it, negatively charged particles are rushing toward the positively charged area of the plasma, and positively charged particles are rushing toward the negatively charged area. In this mad rush, particles are constantly bumping into each other. These collisions excite the gas atoms in the plasma, causing them to release photons of energy.
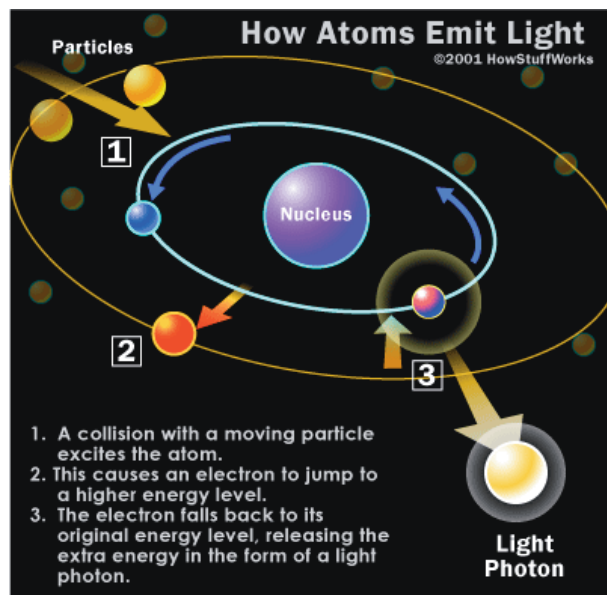
4 *Choose the correct option.*

1. Plasma is a
  a. solid substance.
  b. gas.
  c. liquid.

2. An ion
  a. is always negative.
  b. is always positive.
  c. can be both positive and negative.

3. An atom is neutral because
  a. the number of protons corresponds to the number of electrons.
  b. it is mostly made up of neutrons with no charge.
  c. the number of electrons corresponds to the sum of neutrons and protons.

4. When free electrons collide with the atoms, they
  a. knock loose protons.
  b. set other electrons free.
  c. enter the nucleus.

5. The gas atoms in the plasma excited by the collision of charged particles release
  a. current.
  b. heat.
  c. light energy.

5 *Answer the following questions.*

1. What are ions?
2. What kind of charge do electrons have?
3. What is the charge of an atom in normal conditions? Why?
4. What happens if you introduce free electrons into a gas atom?
5. What happens when the atom loses electrons?
6. What does the collision between charged particles in the plasma bring about?