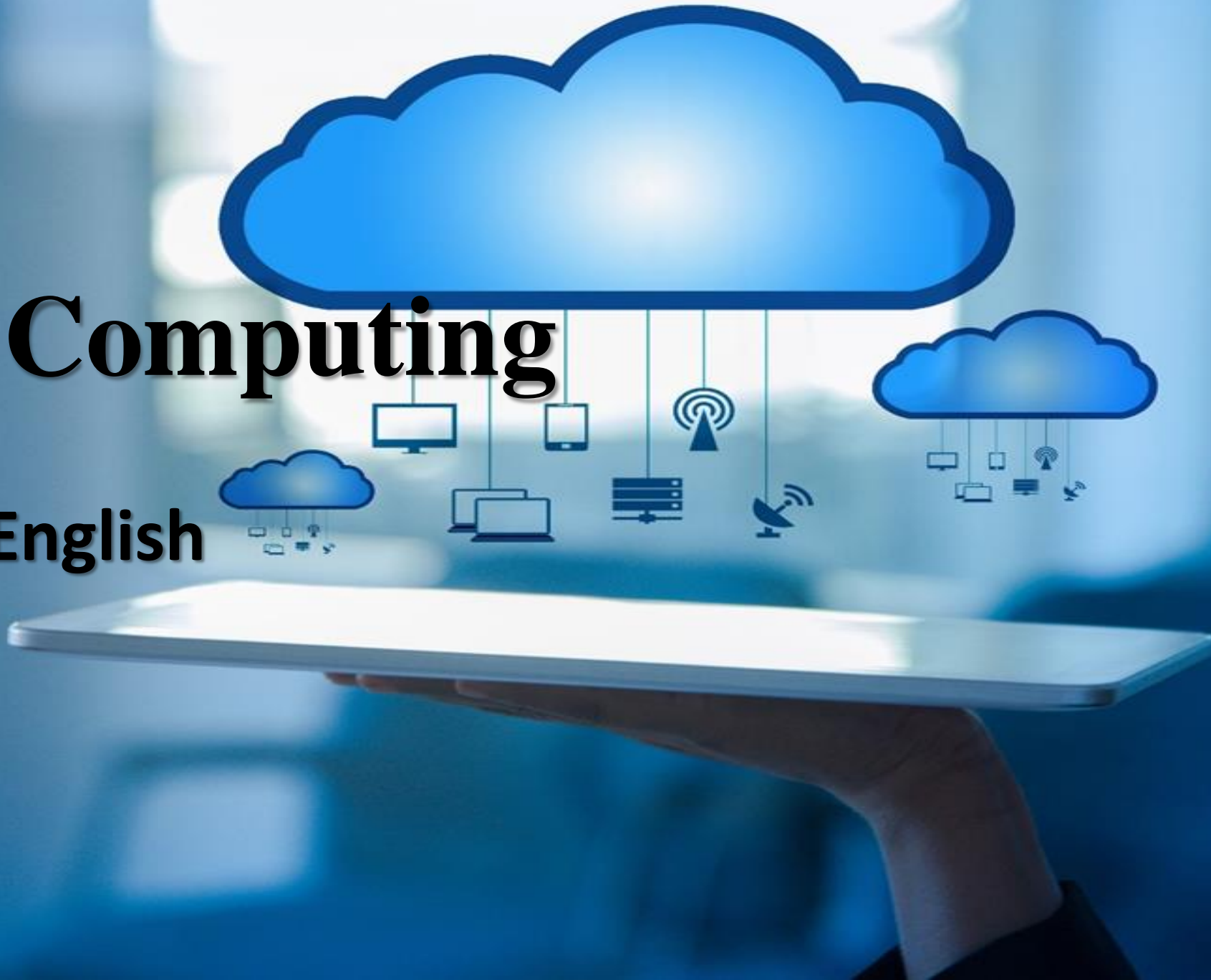


Cloud Computing

Technical English
Chapter 5



Tuning-in

Match the terms listed in the box with the relevant explanation that follows.

..b.	1. An executable software program coded and compiled into the machine language of a particular platform or device to be run in it	a. Cloud computing
.c..	2. The process of storing data on physical storage devices such as hard drives	b. Native app
..d..	3. A file-level computer data storage server connected to a computer network providing data access to a heterogeneous group of clients	c. Local computing
..a.	4. The process of delivery and storage of data and services on the Internet	d. Network attached storage (NAS)

II. Reading Selection

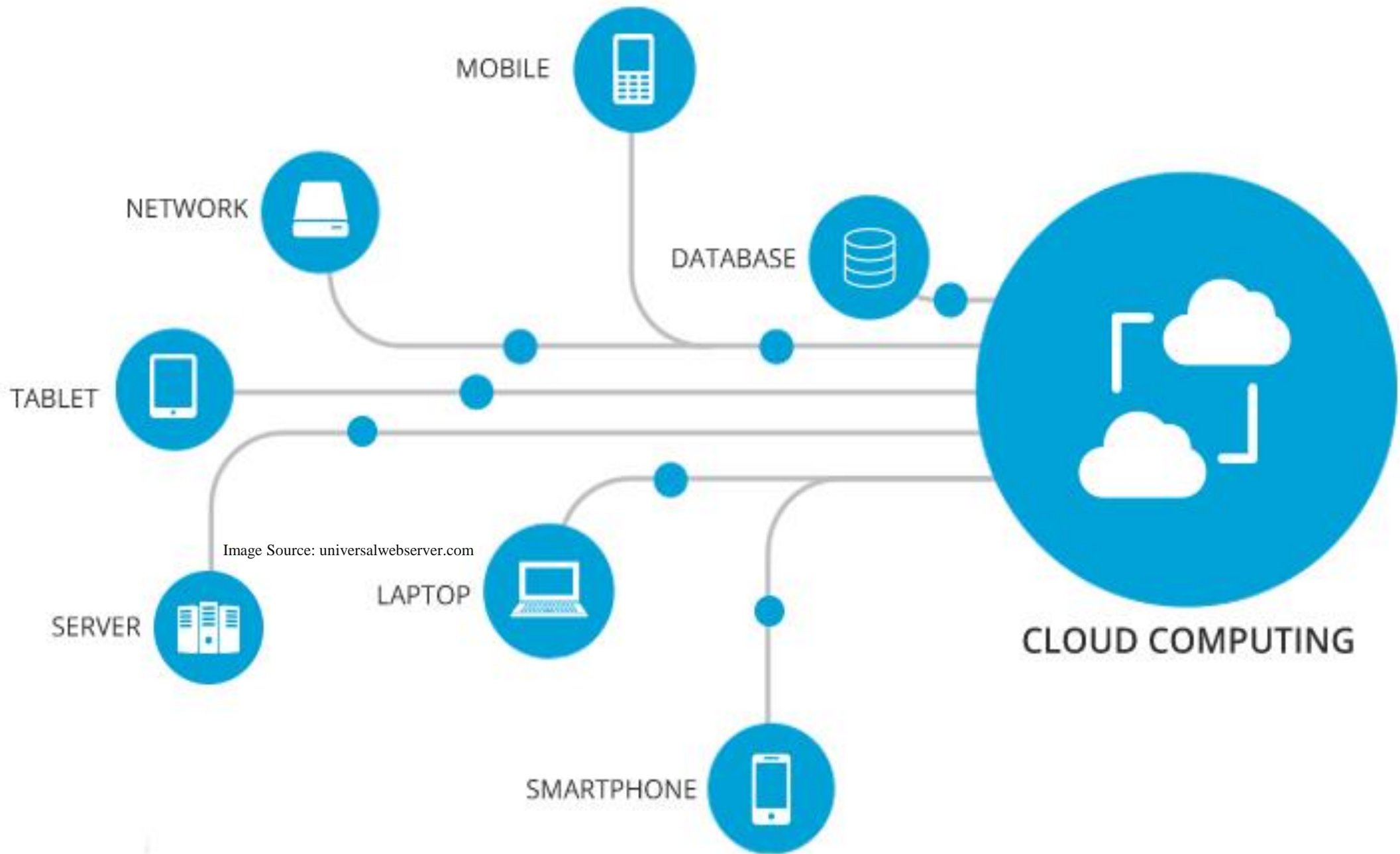
Cloud Computing

- **Introduction**

Cloud computing refers to a process of storing, delivering, accessing and/or syncing digital content and services (i.e. data, programs, networking, software and applications) on the cloud which stands as a metaphor for the Internet or Web. Defined this way, it *underpins* various services and appears as the default option in a wide range of apps. Cloud computing should be distinguished from local computing or storage which is *confined* to storing data on *proprietary* hard drives. Cloud computing also differs from network attached storage (NAS) in which data is stored in an office or home network. Despite these differences, the distinction between local and cloud computing sometimes gets *blurry* when it comes to domestic applications. This is largely attributed to the fact that almost any computer app and software system, today, has cloud storage as part of its defining features. Take Microsoft OneDrive as a possible instance. It should, however, *borne* in mind that, regardless of whether the file is locally accessible or not, synchronization is a determining quality of cloud computing.

Cloud computing service providers help users store data remotely in cyberspace clusters and access it *ubiquitously*. It can be deployed in public, private and hybrid modes. In public cloud computing, public cloud servers are *deployed* on the Internet and operated by third-party companies; whereas private clouds are hosted on private networks. That is, unlike public cloud computing which is available to everyone usually for a particular fee, private cloud computing supplies hosted services in system networks to specific, usually internal, clientele such as an organization or a firm. This requires companies and organizations developing and maintaining their own cloud infrastructures. The control is preserved to specific private data centers; a quality which increases the *versatility* of private cloud computing.

Hybrid clouds feature a mix of private and public cloud services. The *rationale* behind the development of hybrid cloud model has been offering a scalable environment which not only encompasses the potentials of a public cloud but also preserves control to users to run mission-critical tasks on a private cloud. Recent decade has also witnessed the emergence and *integration* of newer models of cloud computing (e.g. multi-cloud and big data clouds). Although cloud computing facilitates data access and processing, there are doubts about its efficiency given that the “speed and cost of local storage easily *outstrips* using a wide-area network connection controlled by a telecom company” (Griffith, 2020).



Cloud Computing Levels

As a system, cloud computing can be categorized into three levels. These include: software-as-a-service (SaaS), infrastructure-as-a-service (IaaS) and platform-as-a-service (PaaS). Software-as-a-service relates to providing on-demand or pay-as-you-go licensure for software delivery, **maintenance** and management over the Internet for customers. Infrastructure-as-a-service, as the name suggests, deals with **procuring** or offering IT infrastructure (i.e. networks, servers, storage and virtual machines) on an on-demand or pay-as-you-go basis for developers with required technical skills to *integrate* services. Platform-as-a-service is very much similar to SaaS expect that it is not online software delivery; rather a platform for software development, delivery, test and management for administrators.

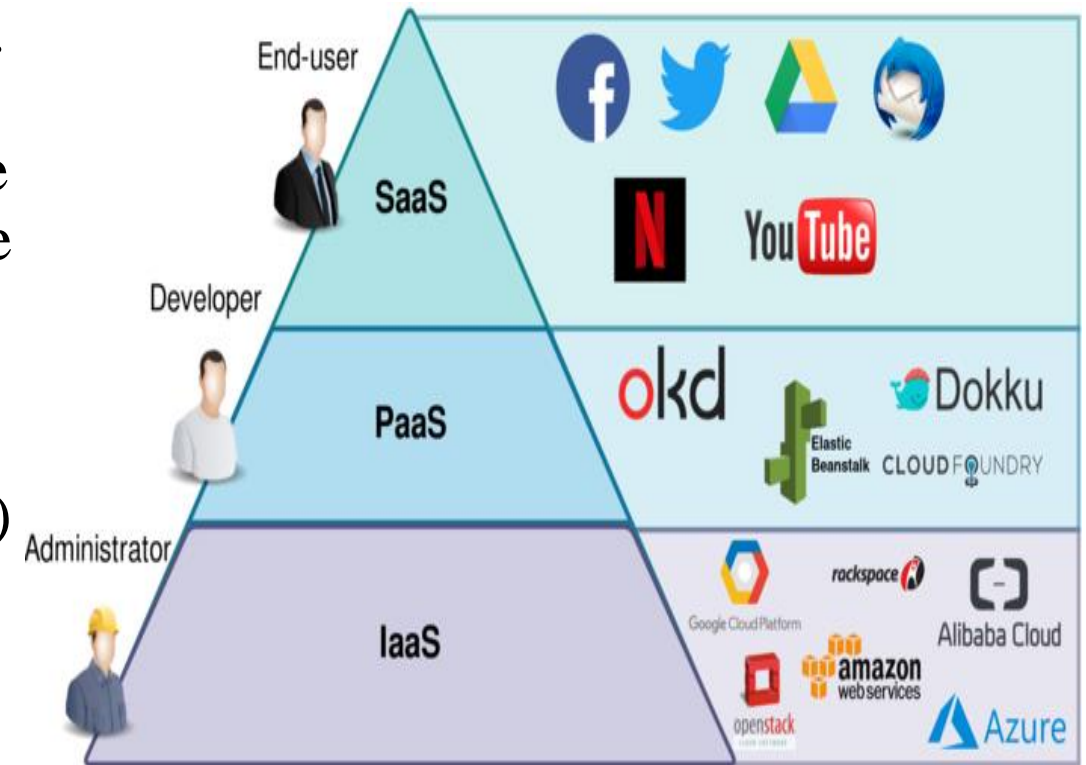


Image Source: cetic.be

Potentials and Drawbacks of Cloud Computing

Despite its infancy, cloud computing has been widely *embraced* by a wide range of customers and organization due to a number of potentials. The first and foremost **merit** of cloud computing for users across all sectors is the possibility of accessing data and settings over multiple devices by means of a *native* browser or an app (e.g. Google Drive and Dropbox) in a **seamless** mode. Data can also be backed up in clouds to safeguard against possible data loss or hard drive crash. Third, the cost-effectiveness of cloud computing makes companies, firms and organizations somewhat independent of the *capital expense* of on-site infrastructure for data management and *rack servers* or the expenses related to *disposing* out-date hardware or software. Hence, companies and businesses can spend their budgets on **operating expenditure** i.e. buying computing as a service. The fourth merit relates to cloud computing's potential to *scale elastically* and on-demand **provisioning** of vast amounts of data over a very short period of time. Fifth, the fact that online global datacenters hosting cloud computing are constantly updated decreases the likelihood of network **latency**.

Irrespective of the potentials, cloud computing is not without its problems. One of the most serious challenges relates to security, particularly when it comes to storing *sensitive* and vital data in the cloud. Even though strict *compliance measures* such as *encryption protection* are taken to *bolster* security, data can be easily lost in case of encryption key loss. Data *sovereignty* is another related problem in case of cloud computing. User data can be easily exposed to and accessed by *law enforcements* of the data center hosting countries.

There is also the possibility for access cuts to clouds when a power outage or natural disaster occurs in the geographical district that hosting server is located. Furthermore, as Frankenfield (2020) notes, “with many individuals accessing and manipulating information through a single portal, *inadvertent* mistakes can transfer across an entire system.” The next problem is largely referred to as the latency issue. That is, the geographical distance can turn into an issue for cloud computing particularly when the computing app which is being used comes from a *congested* network or a data center, say in another continent. In such a case data transfer may become *sluggish*.

The Future of Cloud Computing

The adoption of cloud computing has been on a *surge* over the past decade and is *anticipated* to be climbing more in the forthcoming years as users develop trust in having their data shared and made accessible on the Web rather than in-house servers. In the same vein, it is expected that more organizations and IT enterprises prioritize public clouds particularly for their critical applications to enhance the compatibility of their businesses in line with the digital advancements. Despite this growing popularity, it is difficult to anticipate if there will be similar *impetus* for cloud computing uptake in different sectors.

II. Exercises

Reading Comprehension

A. Decide if the following statements are True, False, or Not Mentioned.

1. The elasticity enables cloud computing scale up or down depending on the demands.
2. Cloud computing helps organizations spend their budgets on capital expense of on-site infrastructure for data management.
3. IaaS providers offer small, medium, large, extra-large and memory- or compute-optimized instances.
4. Cloud computing stands for the process of storing data in a proprietary hard drive.
5. Data loss and security are major challenges confronting cloud computing.
6. The multi-cloud model facilitates migration from one cloud to another or concurrent work across multiple clouds.

B. Answer the following questions based on the text.

1. According to the passage,

- a. SaaS relates to IT infrastructure development and maintenance.
- b. data in cloud computing is stored in a home network.
- c. hybrid clouds encompass both public and private storage features.
- d. public computing is more flexible and adaptable compared to the private one.

2. What distinguishes cloud computing from other forms of computing is

- a. synchronization
- b. ubiquity
- c. data access
- d. Network latency

3. Which one of the following problems negatively impacts the speed of delivery in cloud computing data upload and transfer?

- a. encryption key loss
- b. data sovereignty
- c. multiple users accessing data
- d. geographical distance

4. Cloud computing can be cost-effective as it enables organizations and businesses to

- a. manage capital expenditures on rack servers.
- b. allocate budgets to subscribe for services and other operation services.
- c. dedicate budget to out-dated infrastructure disposal.
- d. back up data to safeguard against possible data loss.

5. Which item is NOT true about cloud computing?

- a. It facilitates data access independent of time and place.
- b. Constant updating of data centers decreases the likelihood of data latency.
- c. PaaS are online software delivery platforms.
- d. A similar incentive for cloud computing can be spotted in different sectors.

C. Classify the following as linked in the passage to:

Public computing

Private computing

Hybrid computing

None

1. Cloud infrastructures developed for specific clients
2. Online open servers hosted by third-party companies
3. Different storage facilities in a single heterogeneous structure.
4. Open services combined with restricted clouds for critical tasks.

Vocabulary Practice

A. Match the words in the right columns with relevant equivalents on the left.

1. data sovereignty	.....	a. Lag, delays in communication over a network
2. Native App	.....	b. Utilize, put into use
3. sync (v)	.....	c. Outtake, exceed
4. bolster	.....	d. Software application compiled in the machine language of the system in which it operates
5. network latency	.....	e. Arrange something to happen in planned manner
6. rack server	.....	f. Money spent by an organization on obtaining or maintaining fixed assets such as equipment
7. provision (v)	.....	g. Information is subject to the laws and regulations of the state in which it is collected
8. capital expenditure	.....	h. A computer designed to be used as a server and placed in a rectangular (rack) position
9. deploy	.....	i. The act of providing something
10 .outstrip	.....	j. underlie
		k. To improve or make stronger

B. Fill in the blanks with the appropriate items. Make changes in words when necessary.


sluggish	disposal	procure	proprietary	compliance
embrace	ubiquity	inadvertent	seamless	integrate

1. The plan applies to all long-lived radioactive waste.
2. This computer program can be easily with your existing software applications.
3. It is remarkable that these extensions work, even when mixing classical and quantum types in a data structure.
4. Obviously, this approach is not well by the proponents of the conventional pedagogies.
5. The history option in password protected Wikis enables the administrator to retrieve data in case of intentional or deletion.
6. A file format is developed and stored according to a particular encoding-scheme, designed to be secret.
7. Since I have updated my operating system, it is responding any time I try to execute a command involving bulky input.
8. This partnership enables the manufacturer to its required supplies from other firms.

III. Language Focus: Un/count Computer Jargons



















- Jargons are special expressions and words that belong to a particular field and are difficult to be understood by others. Sometimes, however, jargons become so widely used that they turn into a common sense for the community. This is true about many of the jargons that belong to computer sciences and technologies. In this chapter we concentrate on countable and uncountable computer jargons.

Points on countable/uncountable nouns:

1. Countable nouns have singular/ plural forms (OS. OSs, application, programs). The verbs follows can be singular or plural.
 2. Uncountable nouns have no plural form (music, robotics, multimedia). The verb follows must be singular.
 3. Some words are countable in many other languages but not in English (money, time, bread, information, news, research). A singular verb must follow.
 4. Singular countable nouns must be preceded by a determiner (*a, an, the, this, her*, etc.). In the plural form they can be used without a determiner.
 5. ***The* is not used in general with uncountable nouns or plural countable nouns :**
- *The software is a program or application used to perform some task. 
- ✓~~The~~ software that I bought was very expensive.
6. *Many, few, a few* are used with countable nouns while *much, little, a little and a great deal* are used with uncountable nouns.

Language Focus Exercises:

A. Decide if the following terms are countable or uncountable. Put a check mark in the appropriate box.

Jargons	Countable	Uncountable	Jargons	Countable	Uncountable
Bandwidth			Information		
Buffer			Hotspot		
Cache			Load		
Crack			Malware		
Data			OS		
Deadlock			Whaling		
Delimiter			Spam		
Domain			Hardware/s oftware		
Encryption			Gigahertz		

Use *a, an, the* or – (*nothing*) to complete the following text.

- The Macintosh (often called "the Mac") was first widely-sold personal computer with graphical user interface (GUI) and mouse. The Mac was designed to provideusers with intuitively understandable, and, in general, "user-friendly" computer interface. Many of user interface ideas in the Macintosh derived from experiments at Xerox Parc laboratory in the early 1970s, including mouse, the use of.....icons to represent objects or actions, point-and-click and click-and-drag actions, and number of window operation ideas.

Use the following determiners to complete the following text.

many, few, the (3), a(3), an, this, these (2), little, a great deal of , --(3)

- In the modern world, it can be hard to imagine, especially now as devices come with touchscreen and people may not have seen a monitor , that computers did not initially come with graphical user interface (GUI).
- computers need interfaces to become more user-friendly and, as such, more sellable.
- of user interface concepts at Japanese company called Xerox Parc. Microsoft successfully adapted user interface concepts for Windows operating system.
- adoption brought in a new computer era and introduced change into lives of more people around the world - not just those that knew how to code. It linked the monitor with mice and keyboards, and nowadays they even allow a range of different inputs, likevoice commands and touchscreens.

IV. Follow-Up Section

A. Complementary Reading

Read the following passage and fill in the blanks with relevant items.

Impetus	fraudulent	breaches	relinquishing	versatility
unauthorized	applications	leaky	on-demand	firewall

Certainly many companies remain concerned about the security of cloud services, although security (1) are rare. In-house systems managed by a team are likely to be more (2) than systems monitored by a cloud provider's engineers dedicated to protecting that infrastructure. To address these concerns, cloud security tools have been developed to monitor data moving to and from the cloud and to identify(3) use of data and (4) downloads.

IV. Follow-Up Section

A. Complementary Reading

Read the following passage and fill in the blanks with relevant items.

Impetus	fraudulent	breaches	relinquishing	versatility
unauthorized	applications	leaky	on-demand	firewall

Private cloud allows organizations to benefit from the some of the advantages of public cloud but without the concerns about (5) control over data and services, because it is secured behind a corporate (6) Companies can control exactly where their data is being held to give developers access to a pool of computing power that scales (7) without putting security at risk. Still, for companies that require additional security, private cloud may be a useful stepping stone, helping them to understand cloud services or rebuild internal (8) for the cloud.

B. Listening

Scan the following QR codes and watch a TEDTalk lecture about Big Data. Answer the questions that follow accordingly.



1. How is the concept of big data defined in the presentation?
2. Find a word used in the presentation which can be used as a synonym for “*underdeveloped*”.
3. Why does big data overwhelm the technologies of the day?
4. What does *overwhelms* in the phrase “*overwhelms the technologies of the day*” imply?
5. Physicists have been with the challenge of ever-expanding big data.

6. It is noted in the presentation that “the ever-growing big data was distributed across different sets of computers which mushroomed at CERN.” What does the verb mushroom stand for?
7. of similar networks speaking different all over Europe and the States.
8. What was the key essence to help physicists across the world to access the ever-expanding big data stored at CERN without travelling?
9. Information sharing was facilitated by creation of (the Global Internet/the Web).
10. The continued growth of our big data our capacity to analyze it at CERN.
11. What has been the rationale behind the development of a computing grid?

C. Presentation Project

In your opinion, *is geography (location) irrelevant when it comes to cloud computing?* In other words, *does it really matter where the cloud computing vendors and users are located?* How?

Answer the above question from the lens of a computer scientist or engineer in one of the following ways and email the output to your instructor:

- An audio-narrated PowerPoint Presentation
- An audio-narrated screencast

D. Writing: Persuasive Writing in Argumentation

Argumentation is a defining feature of academic writing. Reporting the findings of experiments and empirical studies, researchers use argumentation to attribute reasons to the findings and persuade the reader to accept those argumentations. To effectively accomplish this mission, the argumentation needs to be persuasive. Now the main question is: *How can we achieve persuasiveness in argumentation?* To achieve persuasiveness, the author needs to address the following points.

1. ***Use modals when making claims.*** Contrary to what is commonly thought, modals (e.g. *may, might, would, could, and should*) do not decrease the strength of argumentation; rather they make it less directional and, thus, increase the likelihood of its being accepted by the audience. Take the following statement as an instance:

The presence of these particles in the substance may be attributed to the excessive heat it received.

2. Avoid using directional adjectives. Directional adjectives describe concepts, ideas, etc. with a too positive or negative tone (e.g. good, bad, ugly, perfect and awesome). Directional adjectives make your claim too strong to be accepted by the audience. Compare the following statements:

(A) *The proposed strategy is the best method to achieve the desired outcome.*

(B) *The proposed strategy is one of the most efficient methods to achieve the desired outcome.*

Sentence B is considered desirable in academic writing. Too negative or positive adjectives can also make your statement somewhat informal.

3. Avoid making broad generalizations.

Writing Exercises

Replace the directional adjective in the following statements with a more persuasive adjective or phrase.

1. In his recent study, Smith (2020) has *completely ignored* controlling external sources of measurement error. (overlooked)

2. The *perfect* solution to this problem is the synched cooperation of a language programmer with a software designer. (effective/efficient)

3. The findings are *irrelevant* to the data reported in previous research. (inconsistent)

4. The findings prove the *inapprorpaiteness* of the applied strategy. (inconvenience)

V. Translation

Translate the following paragraph in fluent Persian.

- Cloud computing refers to both the applications delivered as services over the Internet and the hardware and systems software in the data centers that provide those services. The services themselves have long been referred to as Software as a Service (SaaS). Some vendors use terms such as IaaS (Infrastructure as a Service) and PaaS (Platform as a Service) to describe their products, but we **eschew** these because accepted definitions for them still vary widely. The line between "low-level" infrastructure and a higher-level "platform" is not crisp. We believe the two are more alike than different, and we consider them together. Similarly, the related term "grid computing," from the high-performance computing community, suggests protocols to offer shared computation and storage over long distances, but those protocols did not lead to a software environment that grew beyond its community...When a cloud is made available in a pay-as-you-go manner to the general public, we call it a *public cloud*; the service being sold is *utility computing*. We use the term *private cloud* to refer to internal data centers of a business or other organization, not made available to the general public, when they are large enough to benefit from the advantages of cloud computing that we discuss here.

(Taken from Armbrust et al. 2010)