

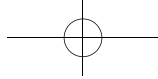
# UNIT

# 1

## Choosing a Topic

**In this unit, you will learn how to:**

- ▶ choose a particular topic for your research;
- ▶ formulate a research question;
- ▶ write a working title for your research essay;
- ▶ enhance your language skills related with reading and listening materials presented in this unit.



# Deciding on a topic

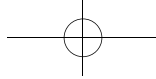
As a college student of science and technology, you are often required to write a literature review about a certain topic, or a 1,500-word term paper. In either case, the writing is a complex process which involves choosing a topic, searching for relevant materials, and compiling a reference list. Hence the first thing you need to do is to choose a research topic.

A topic is what the essay or research paper is about. Choosing a topic for your literature review or research paper requires careful consideration. A topic that is too specialized or too general may bring many problems in terms of the time you can devote to the research or the sources of information available on the topic. How do you choose a topic which is possible to research? There are four principles:

- 1) **Interesting.** If a topic holds your interest, you will most likely enjoy working on it. However, you should also be aware of the interest of your readers. For example, if your readers are from different disciplines or academic backgrounds, your topic should not be too specific.
- 2) **Important.** You also have to consider the value of the topic you are likely to choose, both academic and social. An essay without practical or theoretical value will probably not attract readers.
- 3) **Manageable.** Narrow down your topic to make your paper manageable. For example, if you want to discuss the history of a disease, it may not be possible for you to cover all the important ideas in a 1,500-word essay.
- 4) **Adequate.** You have to ask the question: Can the topic I have chosen be researched? One criterion is that you must make sure that there are adequate source materials available on the topic. Avoid a topic that has very limited information about it, for it is difficult to carry out your research without previous studies.

## **TASK 1** Analyze the steps as to how a topic is made more specific and manageable.





**TASK 2** Choose one of the following topics that you are familiar with or interested in. Then discuss with your partners about the following questions.

- 1 Is the topic appropriate for a 1500-word essay? Why or why not?
- 2 If the topic is too general, how do you narrow it down to a more manageable topic?
- 3 Can you suggest some appropriate topics of each subject?

- **Global Warming**

My narrower subtopics:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

- **Cancer**

My narrower subtopics:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

- **Nanotechnology**

My narrower subtopics:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

- **Internet**

My narrower subtopics:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

- **Artificial Intelligence**

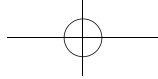
My narrower subtopics:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

- **Energy**

My narrower subtopics:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_



- **Genetic Engineering**

My narrower subtopics:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

- **Universe**

My narrower subtopics:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

**TASK 3** Read the following two essays concerning computers and answer the following questions.

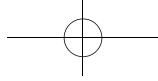
- 1 What is the main idea that each essay tries to illustrate?
- 2 In which aspect do the two essays share the same idea?
- 3 In which aspect do the two essays differ?
- 4 What topic does each essay address? Do you think they are appropriate according to the four principles mentioned on Page 2?

**Text  
1**

## How Do Computer Hackers “Get Inside” a Computer?<sup>1</sup>

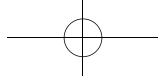
*Julie J. C. H. Ryan*

- 1 This seems like a straightforward question but it’s actually quite complex in its implications, and the answer is anything but simple. The trivial response is that “hackers” get inside a target computer system by exploiting vulnerabilities, but in order to provide more detail, let’s start from the beginning.
- 2 The term “hacker” is fairly controversial in its meaning and interpretation. Some people claim that hackers are good guys who simply push the boundaries of knowledge without doing any harm (at least not on purpose), whereas “crackers<sup>2</sup>” are the real bad guys. This debate is not productive; for the purposes of this discussion, the term “unauthorized user” (UU) will suffice. This term covers the entire range of folks, from those involved in organized criminal activities to insiders who are pushing the limits of what they are authorized to do on a system.
- 3 Next let’s explore what it means to “get inside” a computer. This can refer to gaining access to the stored contents of a computer system, gaining access to the processing capabilities of a system, or capturing information being communicated between



systems. Each of these attacks requires a different set of skills and targets a different set of vulnerabilities.

- 4 So what do UUs take advantage of? Vulnerabilities exist in every system and there are two kinds: known and unknown. Known vulnerabilities often exist as the result of needed capabilities. For instance, if you require different people to use a system in order to accomplish some business process, you have a known vulnerability: users. Another example of a known vulnerability is the ability to communicate over the Internet; enabling this capability, you open an access path to unknown and untrusted entities. Unknown vulnerabilities, which the owner or operator of a system is not aware of, may be the result of poor engineering, or may arise from unintended consequences of some of the needed capabilities.
- 5 By definition, vulnerabilities may be exploited. These can range from poor password protection to leaving a computer turned on and physically accessible to visitors in the office. More than one technical exploit has been managed simply by sitting at the receptionist's desk and using his computer to access the desired information. Poor passwords (for example, a username of "Joe Smith" with an accompanying password of "joesmith") are also a rich source of access: password cracking programs can easily identify dictionary words, names, and even common phrases within a matter of minutes. Attempts to make those passwords more complex by replacing letters with numbers, such as replacing the letter O with the number zero, don't make the task much harder. And when a UU can utilize a valid username-password combination, getting access to a system is as easy as logging in.
- 6 If a target system is very strongly protected (by an architecture that includes both technical controls such as firewalls or security software, and managerial controls such as well-defined policies and procedures) and difficult to access remotely, a UU might employ low-technology attacks. These tactics may include bribing an authorized user, taking a temporary job with a cleaning company, or dumpster diving<sup>3</sup> (rifling through trash in search of information). If the target system is not so strongly protected, then a UU can use technical exploits to gain access.
- 7 To employ technical exploits a UU must first determine the specifications of the target system. It would do no good whatsoever for a UU to use a technical exploit against a Microsoft vulnerability if the target system is a Macintosh<sup>4</sup>. The UU must know what the target system is, how it is configured, and what kind of networking capabilities it has. Once these parameters (which can be determined remotely through a variety of methods) are known, then the UU can exploit the configuration's known vulnerabilities. The availability of preprogrammed attacks for common configurations can make this task quite simple; UUs that use these scripted capabilities are somewhat derisively known as "script kiddies"<sup>5</sup>.
- 8 One way a technically proficient UU can remotely determine the configuration of a target system is through capabilities inherent in hypertext transfer protocol<sup>6</sup> (http).



Users who access certain websites actually send configuration information, such as the type of browser being used, to the requesting site. Once the system configuration is known, then exploits can be selected.

- 9 Another type of attack is one that is preprogrammed against specific vulnerabilities and is launched without any specific target—it is blasted out shotgun style with the goal of reaching as many potential targets as possible. This type of attack eliminates the need for the first step, but is less predictable in both outcome and effectiveness against any given target.
- 10 It's important to recognize that the end goal of unauthorized access varies depending on the UU's motivations. For example, if a UU is trying to gather a lot of zombie computers<sup>7</sup> for use in a distributed denial of service attack, then the goal is to sneak a client program onto as many computers as possible. One way to do this fairly effectively is through the use of a so-called Trojan horse program<sup>8</sup>, which installs the malicious program without the knowledge or consent of the user. Some of more recent mass Internet attacks have had this profile as an element of the attack pattern.
- 11 Protecting yourself against attacks is a multi-step process, which aims to limit and manage the vulnerabilities of your system. (It's impossible to eliminate them all.) First, make sure you have all the latest patches for your operating system and applications—these patches generally fix exploitable vulnerabilities. Make sure your password is complex: It should include letters, numbers, and symbolic characters in a nonsensical manner. Also, consider getting a hardware firewall and limiting the flow of data to and from the Internet to only the few select ports you actually need, such as email and Web traffic. Make sure your anti-virus software is up-to-date and check frequently to see if there are new virus definitions available. (If you are using a Windows system, you should ideally update your virus definitions every day.) Finally, back up your data. That way if something bad does happen, you can at least recover the important stuff. (1,023 words)

## Terms and notes

1 This text is from *Scientific American*, August 16, 2004.

2 **cracker**: someone who illegally breaks into a computer system in order to steal information or stop the system from working properly 黑客

3 **dumpster diving**: the practice of sifting through commercial or residential trash to find items that have been discarded by their owners, but that may be useful to the dumpster diver 垃圾搜寻

4 **Macintosh**: a series of personal computers designed, developed, and marketed by Apple Inc. 麦金塔电脑 (苹果电脑其中一个系列的个人电脑)

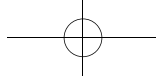
5 **script kiddies**: a derogative term used to describe those who use scripts or programs developed by others to attack computer systems and networks and deface websites. They are more

immature, but unfortunately often just as dangerous exploiter of security lapses on the Internet. “脚本小子”

6 **hypertext transfer protocol**: the set of rules for transferring files (text, graphic images, sound, video, and other multimedia files) on the World Wide Web 超文本传输协议

7 **zombie computer**: a computer that has been secretly compromised by hacking tools which allow a third party to control the computer and its resources remotely 僵尸电脑

8 **Trojan horse program**: a malicious computer program that poses as something desirable or is hidden within a different program to trick users into loading the malicious software onto their computers 木马程序



# Electronic Threats of a Computer<sup>1</sup>

## Text 2

*Will Knight*

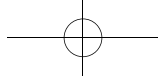
- <sup>1</sup> Any computer connected to the Internet faces a daunting range of electronic threats. Perhaps the biggest single threat to any computer is the humble software bug. Seemingly harmless programming errors can be exploited to force entry into a computer and also provide the weak spots that allow computer worms and viruses to multiply.
- <sup>2</sup> Many software bugs will simply cause a computer to crash. But an expert programmer can sometimes figure out how to make a computer malfunction in a creative way, so that it provides access to secure parts of a system, or shares protected data.
- <sup>3</sup> When a software vulnerability is revealed, it is often a race against the clock to apply the correct software patch before an attacker can convert the bug into an “exploit” that can be used to cause major damage.

## Viruses and worms

- <sup>4</sup> A computer virus is a program that spreads between computers by hiding itself within a—seemingly innocent—document or application. A worm, on the other hand, is a program that replicates and travels without “infecting” anything else on a system.
- <sup>5</sup> Many modern specimens of malicious code, however, use a mixture of tricks to cheat their way onto computer systems, blurring the line between worms and viruses. The terms are now often used interchangeably.
- <sup>6</sup> The first worms appeared in the 1970s and spread slowly between computers connected to the same network. They simply displayed an annoying message on the screen of each infected machine. The first computer virus, called Elk Cloner<sup>2</sup>, was written in 1982 and infected computers via floppy disks.

## Trojans and zombies

- <sup>7</sup> But viruses and worms no longer just provide a way for hostile hackers to gain notoriety. Today’s viral code can contaminate computers at lightning speed, spreading via email, peer-to-peer<sup>3</sup> file-sharing networks and even instant messaging programs. The most successful ones cause serious damage, forcing companies around the globe to close down while infected computers are cleaned up.
- <sup>8</sup> A string of recent specimens have been designed to snatch passwords or credit card information and install programs that can be used to remotely control infected machines. These programs are known as Trojan horses.



- 9 There is evidence that virus writers can earn large amounts of money by leasing access to networks of compromised computers<sup>4</sup>—often referred to as “botnets<sup>5</sup>”. These groups of remote-controlled “zombies” have been used to squeeze out money from websites, by threatening to crash them with a denial-of-service (DoS) attack<sup>6</sup>. This involves overloading a server with fake page requests, so that real messages cannot get through.

### Spam<sup>7</sup>, Spam, Spam

- 10 Spammers have also begun using botnets to forward unwanted bulk email advertising, or spam, through scores of zombie PCs. This makes it far more difficult for spam hunters to block the messages at source and catch the offenders.
- 11 Once considered a fairly minor problem, spam is rapidly spiraling out of control, and much more than half of all email messages are now thought to consist of unwanted advertising messages.
- 12 To combat computer scientists’ best efforts to stem the tide of junk email, the spammers have had to become more cunning and sophisticated. More recently, “spim” (spam by instant messenger) and “spit” (spam by Internet telephony) have joined the fight.

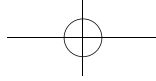
### Phishing<sup>8</sup>

- 13 Spam’s more sinister cousin is the phishing email. This is a con trick that arrives as an email and tries to trick a recipient into handing over money or sensitive personal information like their bank account details or a username and password.
- 14 The simplest phishing tricks try to deceive a target into sending money as part of a get-rich-quick scheme. But phishing tricksters are also getting more devious and recent scams pose as customer service emails and send users to fake banking or commercial websites where they are invited to “re-enter” their account information.
- 15 Some genuine sites have even proven vulnerable to software bugs that can be exploited to capture information from regular users. Phishing is especially threatening because it can be used to steal a person’s digital identity.

### Spyware

- 16 Along with spam and phishing, spyware represents the third of an unhappy trinity of Internet pests. These harmful and secret programs typically find their way onto a computer system alongside another, often free, software application, although some can also exploit software bugs to get onto a machine. The programs are used to serve up unwanted adverts, change system settings and gather information on a user’s online behavior for marketing purposes.





## Hackers

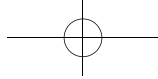
- 17 The term “computer hacker” was first coined in the 1960s and originally meant someone capable of developing an ingenious solution to a programming problem. But the phrase has since fallen into disrepute, entering the popular vocabulary as a term for a programmer with criminal intent.
- 18 The earliest “criminal” hackers were in fact relatively harmless, interested in testing the boundaries of their knowledge and their ability to get around security measures. They mainly performed harmless pranks, for example employing low-tech tricks to get free calls through the U.S. phone networks.
- 19 There are many tools in the modern hacking kit, including network scanners, packet sniffers<sup>9</sup>, rootkits<sup>10</sup> and decompilers. But “social engineering”—for example, putting a particularly tempting message in an email header to encourage people to open it—and even search engines can also be useful weapons for the hacker.

## Computer crime

- 20 As the number of computers networks has grown, so have the possibilities for more serious misuse. And, as money increasingly becomes a digital commodity, the world has seen the emergence of serious computer criminals.
- 21 Criminal gangs have also started to get in on the action, attracted by the huge quantities of money now spent online every day. There is evidence that dishonest experts can also earn serious money from crime gangs by breaking into computer systems, writing viruses and creating phishing scams.
- 22 And it is not just ordinary desktop computers that are under threat. Governments, banks and critical infrastructure can also be brought to a standstill by an expert armed only with a laptop computer and a net connection.

## Mobile menace

- 23 The biggest new target for computer hackers is the mobile device. Virus writers are already experimenting with code designed for smart phones and experts predict more may be on the way, while hackers are also looking at ways to crack handheld devices.
- 24 While the Internet has transformed global communication beyond recognition, the arms race between those intent on harnessing its power for criminal purposes and those tasked with preventing them has only just begun. (1,067 words)



## Terms and notes

- 1 This text is from *New Scientists*, September 4, 2006.
- 2 **Elk Cloner**: one of the first known microcomputer viruses that spread outside the computer system or lab in which it was written 第一个已知被广泛传播的计算机病毒
- 3 **peer-to-peer**: a distributed application architecture that partitions tasks or workloads between peers 端对端技术
- 4 **compromised computer**: 被感染的计算机
- 5 **botnet**: a collection of compromised computers which have been recruited by running malicious software 僵尸网络
- 6 **denial-of-service (DoS) attack**: an attempt to make a computer resource unavailable to its intended users 拒绝服务攻击
- 7 **spam**: use of electronic messaging systems to send unsolicited bulk messages indiscriminately 垃圾邮件
- 8 **phishing**: an attempt to acquire information such as usernames, passwords, and credit card details by masquerading as a trustworthy entry in an electronic communication 网络钓鱼
- 9 **packet sniffer**: a computer program or a piece of computer hardware that can intercept and log traffic passing over a digital network or part of a network 数据包嗅探器
- 10 **rootkit**: a stealthy type of malicious software designed to hide the existence of certain processes or programs from normal methods of detection and enable continued privileged access to a computer 隐藏其他程序进程的软件

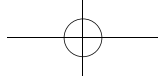
### **TASK 4** Listen to Lecture 1 and watch the video clips of Lectures 2 and 3, and then finish the following tasks.

- 1 Write down the topics of the three lectures according to what you have heard.  
Lecture 1: \_\_\_\_\_  
Lecture 2: \_\_\_\_\_  
Lecture 3: \_\_\_\_\_
- 2 Compare the topics of the three lectures and the two texts, and write down your own topics concerning "Hackers". Then share your topics with your partner and evaluate each other's topics. (You may refer back to the four principles listed on Page 2)  
Topic 1: \_\_\_\_\_  
Topic 2: \_\_\_\_\_

### **TASK 5** Search on the Internet and find two interesting topics of a particular subject (IT, genetic engineering, global warming, etc.) and complete the following table. Then work in groups of 3-4 and evaluate those topics according to the four principles listed on Page 2.

Subject : \_\_\_\_\_

Topic	Title



# Formulating a research question



A research question is a statement that identifies the focus of your topic. It is the question that your study or your paper wants to answer. For example, you may develop it into the following research questions if your topic is “Electronic Threats of a Computer”.

- 1) What kind of electronic threats may our computer face?
- 2) What are the major characteristics of those threats?
- 3) How can we cope with those threats?

A research question, therefore, serves two purposes:

- 1) It identifies the specific objectives your research or your paper will address. You can check whether you answer it completely when you finish your study or your paper.
- 2) It determines the size of your research or the length of your paper. Obviously your paper will be shorter if you answer the third question only (How can we cope with those threats?).

Hence raising research questions will make your topic more specific, more tangible and more focused.

**TASK 1** Read the following two essays and then list their research questions respectively.

### Text 3

Research question 1: \_\_\_\_\_

Research question 2: \_\_\_\_\_

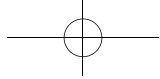
Research question 3: \_\_\_\_\_

### Text 4

Research question 1: \_\_\_\_\_

Research question 2: \_\_\_\_\_

Research question 3: \_\_\_\_\_



## Text 3

# Advantages of Cloud Computing<sup>1</sup>

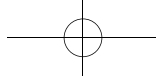
Arun Kumar

## 1 An introduction to cloud computing

- 1 Before talking about the advantages of cloud computing, let's look at what cloud computing is and its various types. Cloud computing offers several advantages by allowing you to use services that include infrastructure, applications, and/or storage space for a nominal fee<sup>2</sup>. As these services are created and offered by the cloud service provider, you need not purchase additional infrastructure for use at your own premises (servers, application programs, operating systems, etc.).
- 2 One can define cloud computing as a pay-per-use model for enabling on-demand access to reliable and configurable resources that can be quickly provisioned and released—with minimal consumer involvement in terms of management. You pay only for the resources you use. You need not set up the infrastructure or buy the software. This is just an abstraction of the many advantages of cloud computing.
- 3 Any cloud should have the following characteristics irrespective of whether it is private or public and irrespective of the type of service it offers:
  - 1 It should be able to quickly allot and relieve resources whenever required by clients;
  - 2 It should have real-time backup to offer maximum up time to clients;
  - 3 It should be able to cater to the needs of clients without having to involve clients into management of the service.
- 4 The next section takes a look at advantages of cloud computing by studying the different types of clouds based on the service they offer.

## 2 Types of cloud services

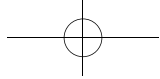
- 5 **SaaS<sup>3</sup> (Software as a Service):** This is the most popular form of cloud services. The service provider offers a software to support the service on offer. The software is built by the service provider while the end users can configure it to suit their needs. The clients (end users) however, cannot change or modify the software. Mozy<sup>4</sup> is an example of SaaS. It is basically a backup service that offers a software to help people back up their data. Thus, you can use the service without actually having to code or buy the software. You just have to pay a monthly or annual fee to use the service.
- 6 **PaaS<sup>5</sup> (Platform as a Service):** It offers a platform to clients for different purposes. For example, the Windows Azure<sup>6</sup> offers a platform to developers to build, test, and host applications that can be accessed by the end users. The end users may or may not know that the application is hosted on the cloud. As mentioned earlier, the storage space for user data may be increased or decreased per the requirement of the applications. As with the SaaS, you do not need to build the platform. You just pay a nominal fee for using the service.



- 7 **IaaS<sup>7</sup> (Infrastructure as a Service):** It offers infrastructure on demand. The infrastructure can be anything from storage servers to applications to operating systems. Office 365<sup>8</sup> offers a combination of these infrastructures and falls under this category. With Office 365, you can get plenty of applications along with storage space. Buying infrastructure or renting it out in traditional models can be very expensive. When you opt for IaaS, you save a lot on expenses, space, and personnel required to set up and maintain the infrastructure. The cloud service provider takes care of setting up and maintaining the infrastructure. You just pay a fee to use it per your requirements.
- 8 As you can see, there are numerous advantages of cloud computing, the most basic ones being remote accessibility, lower costs, and quick re-provisions.

### 3 Green computing

- 9 This section talks about advantages of cloud computing under green computing. Green computing can be defined as energy efficient usage of computing resources. Most of the computers today are Energy Star<sup>9</sup> certified. They are designed to reduce the consumption of electricity while also reducing emissions that damage the environment. Taking the advantages of cloud computing further contributes to green computing.
- 10 As cloud computing can always be used to re-provisioning of resources, when you need to expand, you need not buy the infrastructure to increase the carbon emissions by way of using more electricity to cool off the computer resources. You can just expand to the cloud to use the pre-built resources to stop the increase in electricity usage at your end. You also need not add cooling components thereby reducing the hazardous emissions. Thus, you save the environment while also saving on the expenses incurred due to a demand for expansion.
- 11 The expansion can be as small as writing a code for your business. There are several generic software available through SaaS. You can use the one that suits your company or personal needs. This saves you the trouble of adding one or more computers to your infrastructure for the purpose of storing the database(s) used by the code. This keeps a check on your electricity usage, thereby contributing to green computing.
- 12 Cloud computing also allows you to let your employees telecommute. This means large savings while contributing heavily to environmentally friendly green computing. Your employees can access the cloud—public or private—from any corner of the world and can work from their homes. This means they need not drive to the business premises. This saves them fuel and reduces carbon emissions, which in turn, saves the environment. You can also cut down the number of electronic devices when your employees are telecommuting. You use less computers and other machinery, which means reduced usage of electricity. If you use less computers and servers, you also cut down on cooling resources, which reduce both electricity usage and carbon emissions—again contributing to the environment and green computing.



## 4 Conclusion

- 13 There are several advantages of cloud computing as evidenced by the above discussion. Here's a summary:
- 14 **Remote Accessibility:** With cloud computing, your business is not restricted to a particular location. This applies to individuals also. You can access the services from anywhere. All you need is your ID and password. In some cases, there may be extra security requirements but as they too are mobile, you can easily access your cloud services from any part of the world.
- 15 **Easy Expansion:** As of the characteristics of cloud computing is its flexibility, you can quickly access more resources if you need to expand your business. You need not buy extra infrastructure. You just need to inform your cloud provider about your requirements and they will allocate resources to you. In most cases, the entire process is automated so the expansion takes just a few minutes. The same is applicable if you wish to use less resource. One of the best advantages of cloud computing is easy reallocation of resources.
- 16 **Security:** Though people doubt cloud computing, clouds tend to be more secure than the traditional business models. Clouds offer real-time backup which results in less data loss. In case of outage, your customers can use the backup servers that sync<sup>10</sup> with the main ones as soon as they are up. Your business gets maximum uptime without any loss of data during the transitions. Other than this, clouds are less prone to hacks and DdoS<sup>11</sup> attacks as people don't know the whereabouts of your data.
- 17 **Environmentally Friendly:** Usage of ready-made resources tailored to your needs helps you reduce the electricity expenses. While you save on electricity, you also save on resources required to cool off computers and other components. This reduces the emissions dangerous to environment. (1,229 words)

## Terms and notes

1 This text is taken from <http://www.brighthub.com>.

2 **nominal fee:** 象征性的收费

3 **SaaS:** a software delivery model in which software and its associated data are centrally hosted and typically accessed by users using a thin client via a web browser over the Internet 软件即服务模型 (云计算三种模型之一)

4 **Mozy:** an online backup service for both Windows and Mac users 在线备份服务 (网络硬盘)

5 **PaaS:** the delivery of a computing platform and solution stack as a service 平台即服务模型 (云计算三种模型之一)

6 **Windows Azure:** a Microsoft cloud platform used to build, host and scale web applications through Microsoft data centers 微软云计算的操作系统

7 **IaaS:** a service delivering computer infrastructure—typically

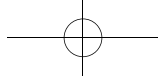
a platform virtualization environment—as a service, along with raw storage and networking 基础架构即服务模型 (云计算三种模型之一)

8 **Office 365:** commercial software plus services offering a set of products from Microsoft Corporation, with the initial plan including a Professional subscription and an Enterprise subscription 微软云办公软件

9 **Energy Star:** an international standard for energy efficient consumer products originated in the United States of America “能源之星”计划

10 **sync:** moving or working at exactly the same time and speed 同步, 同时发生

11 **DdoS:** a distributed denial of service attack which occurs when multiple systems flood the bandwidth or resources of a targeted system, usually one or more web servers 分布式拒绝服务攻击



## Text 4

# Security Benefits of Cloud Computing<sup>1</sup>

*Felician Alecu*

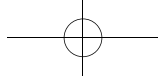
## 1 The future of the Internet

- 1 Today, we can easily notice how the nature of the Internet is changing from a place used to read Web pages to an environment that allows the users to run software applications.
- 2 An interesting analogy, introduced by Nova Spivack<sup>2</sup>, describes the evolution of the Web in the following terms:
  - 1) Web 1.0 was seen as read-only, used to create almost static pages, like personal websites, newspapers, shopping applications and so on.
  - 2) Web 2.0 introduced the read-write content—the publishing becomes participation, the websites turn into blogs and the blogs were aggregated together into large collections. Interactivity and collaboration are now very common for the Web content.
  - 3) Web 3.0 will allow the read-write-execute operations, so the content will become executable Web.
- 3 The future belongs to the Web 3.0, also called the intelligent Web, which is the next stage of the Internet evolution based on the services for data mining, artificial intelligence, independent agents, speech recognition and new computing models (distributed, grid<sup>3</sup> and cloud).
- 4 The Web 3.0 can be seen as a new way of creating and using applications that can run on different devices, like mobile phones or PDAs<sup>4</sup> and having the data stored into the cloud.

## 2 Fundamentals of cloud computing

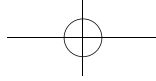
- 5 Simply speaking, the cloud means the Internet. The term is derived from the way in which the Internet is often represented into the network diagrams. Cloud computing represents a new paradigm of the Internet computing in which the software is seen as a service and the applications and data are stored on multiple servers that can be accessed from the Internet.
- 6 The current cloud computing architecture involves the existence of data centers that are able to provide services to the clients located all over the world. In this context, the cloud can be seen as a unique access point for all the requests coming from the customers/clients.





- 7 A mobile phone or PDA can successfully play the role of the cloud client. For this reason, the mobile device should run on the Android<sup>5</sup> or iPhone platforms. Also, a Web browser, like Google Chrome<sup>6</sup>, can be a cloud client without any problem.
- 8 The cloud clients could be regular PCs, mobile phones, PDAs or any other similar devices. Basically, the client is renting or simply accessing the processing capacity needed from the data center. The quality of the service becomes a crucial factor of the cloud computing success.
- 9 It is important to notice that a client could be a hardware device and/or a software application, like a browser, for example.
- 10 Cloud computing allows to move the processing effort from the local devices to the data center facilities. In such a way, any phone, for example, could be able to solve complex differential equation systems by simply passing the specific arguments to a data center service that will be capable to give back the results in a very short time. In these conditions, the security of data and applications becomes a very major issue.
- 11 The main advantages of the cloud computing are the following:
  - 1) there is no need to download or install a specific software, the software deployment becomes a very fast and easy task;
  - 2) the cost is low or even free, in some cases. The clients should pay only for the resources they actually use;
  - 3) if the client computer crashes, there is almost nothing lost because everything is stored into the cloud;
  - 4) there is no need to update the local system when some new fix packs are released;
  - 5) cloud computing can be used on clients having minimal hardware requirements, like mobile phones or PDAs;
  - 6) the problem of licensing different software packages is moved to the data center level;
  - 7) no costs (or very small ones) for hardware upgrades;
  - 8) the users are not dependent by their personal computer because they can use any other device having an Internet connection and minimum software requirements.
- 12 Of course there are some disadvantages as well, like:
  - 1) an Internet connection is required in order to be able to access and use the cloud and this Internet dependence makes the offline mode impossible. On the other hand, some applications require a high speed Internet connection so the traffic speed may affect the overall performances;





- 2) on a long term basis, the subscription fee may be more expensive than buying the hardware, for example;
- 3) it is hard to integrate with the existing in-house infrastructure. Also, moving back from cloud to the in-house model can be very difficult;
- 4) there are not enough major suppliers in this field, yet;
- 5) a very big concern is the data security because the data and the software are located on remote servers that can crash or disappear without any additional warnings. In this context, the service quality becomes crucial and the need of the backups is vital.

### 3 Security benefits

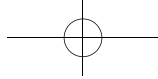
13 The cloud computing provides some major security benefits for individuals or companies, like the following:

- 1) centralized data storage—this goes to reduced effects of loosing some hardware items, like a laptop, for example. While the main part of the applications and data is stored into the cloud, loosing a client is not a big issue anymore—there are no sensitive data lost and a new client can be connected to the cloud very fast;
- 2) monitoring of data access becomes easier because it is enough to monitor only one place, not thousands of computers belonging to a major company, for example;
- 3) increased uncertainty—it is almost impossible for a thief to determine which physical component to steal in order to get a digital asset;
- 4) virtualization allows a rapid replacement of a compromised server located into the cloud without major costs or damages. Also, the downtime for computers in the cloud could be substantially reduced because it is very easy to create a clone by using an image;
- 5) logging—extended logs can be activated because the cloud is big enough to store large collections of data;
- 6) the security changes can be easily tested and implemented.

Cloud computing is still at the beginning so the list remains wide open for new entries.

### 4 Conclusion

14 Today, the information infrastructure is moving faster to a simple but very innovative concept called cloud computing. There are a lot of applications able to exploit the cloud and the list is expanding faster. Many devices are cloud compatible, like the traditional computers, PDAs, mobile phones and even browsers (Google Chrome). In this context, cloud computing is potentially able to offer major security benefits. (1,098 words)



## Terms and notes

1 The text is a paper presented on International Conference on Security for Information Technology and Communication, November 2008, Bucharest, Romania.

2 **Nova Spivack:** an IT entrepreneur and one of the world's top thought-leaders on the future of the Web. He also writes about the future of the Internet and topics about Semantic Web technology and Web applications. 诺瓦·斯皮瓦克(美国企业家、搜索引擎研究专家)

3 **grid:** grid computing, the application of a network of computers to a single problem 网格计算(新一代的分布式计算方法)

4 **PDA:** personal digital assistant 个人数码助手, 掌上计算机

5 **Android:** 安卓系统(由谷歌开发的基于 Linux 平台的手机操作系统)

6 **Google Chrome:** 由谷歌开发的开放原始码的网页浏览器

### **TASK 2** Develop each of the following topics into two or three research questions.

The first one is done for you as an example.

#### 1 Topic 1: Nuclear Waste Disposal

Research questions:

- 1) What is nuclear waste?
- 2) What are the harmful effects if nuclear waste is not appropriately disposed of?
- 3) How are we supposed to dispose of nuclear waste safely and economically?

#### 2 Topic 2: Threats of Artificial Intelligence

Research questions:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

#### 3 Topic 3: The Potentials of Nanotechnology

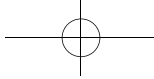
Research questions:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

#### 4 Topic 4: Global Warming and Its Effects

Research questions:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_



**TASK 3** Brainstorm in groups of interest and/or in groups of disciplines for at least two potential topics you are going to research in the course and then answer the following questions.

- 1 Why do you choose the two topics? For example, are they interesting, important, controversial, manageable or adequate in source materials?
- 2 What research questions of each topic do you want to answer through your research?

**Topic 1:** \_\_\_\_\_

My reasons:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

My research questions:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

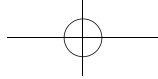
**Topic 2:** \_\_\_\_\_

My reasons:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_

My research questions:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_



## Writing a working title

A working title refers to the title you think of initially for the essay which you are going to write, which may be changed as you read more articles and become more involved in the research.

A good title must briefly but accurately reflect the main ideas of the essay or indicates the topic you will be discussing in the essay. It is important, therefore, to decide which type of essay you intend to produce before you begin to think about a title. Two things influence the type of essay: method and content. The former will use key words like *compare*, *analyze*, *contrast*, *discuss*, *evaluate*, *study* and *assess*, and the latter will include the key words like *causes*, *effects*, *advantages*, *benefits*, *effectiveness* and so on apart from the words reflecting the subject matter like *computer hackers*, *lung cancer*, *nuclear power plant*, *energy* and so on. Hence a typical title is composed of : **1) subject matter + 2) key words of the method + 3) key words of the content**

As English titles tend to use phrases instead of sentences, we will have such titles as:

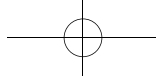
- An Analysis of Psychological Motivation of Computer Hackers
- The Comparison of the Effectiveness of Two Approaches to Lung Cancer
- The Analysis of Environmental Effects of Nuclear Power Plants

In most cases, however, key words of the methods could be omitted for conciseness. The following, therefore, are appropriate titles:

- Psychological Motivation of Computer Hackers
- Effectiveness of Two Approaches to Lung Cancer
- Environmental Effects of Nuclear Power Plants

**TASK 1** Suppose that you are going to write an essay about Climate Change. Work in pairs to discuss the following essay titles and tell each other the most appropriate one(s) you will choose and why.

- 1 The Effects of Climate Change
- 2 What Are the Economic Effects of Climate Change?
- 3 The Causes and Effects of Global Warming
- 4 The Melting Poles: the Greatest Danger from Global Warming
- 5 How to Combat Climate Change?
- 6 Some Effects of Global Warming on China
- 7 A Study of Effects of Global Warming on Agriculture
- 8 Global Warming Effects on Mental Health
- 9 Ozone Depletion and Climate Change
- 10 Potential Impact of Climate Change on World Food Supply



**TASK 2** Watch the video clips of Lectures 4 and 5, and answer the following questions.

- 1 What is the relationship between the two lectures in terms of content?  
\_\_\_\_\_
- 2 In which aspect are the two lectures related to Texts 3 and 4?  
\_\_\_\_\_
- 3 What are the titles of the two lectures you may suggest?  
Lecture 4: \_\_\_\_\_  
Lecture 5: \_\_\_\_\_

**TASK 3** Write a working title according to the topic you have chosen for your essay and discuss with your partner as to whether it is appropriate.

The title for my essay: \_\_\_\_\_

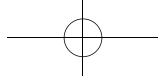
# Enhancing your academic language



## Reading: Text 1

**1** Match the words with their definitions.

- |                     |   |
|---------------------|---|
| _____ 1 debate      | a to a small degree or extent   |
| _____ 2 somewhat    | b (computing) that is accepted by the system  |
| _____ 3 eliminate   | c the right to obtain or make use of or take advantage of something                       |
| _____ 4 valid       | d not permanent; not lasting  |
| _____ 5 access      | e completely get rid of something that is unnecessary or unwanted                         |
| _____ 6 temporary   | f a piece of computer software that is designed to do a particular job                    |
| _____ 7 inherent    | g a discussion in which reasons are advanced for and against some proposition or proposal |
| _____ 8 application | h obtainable or accessible and ready for use or service                                   |
| _____ 9 available   | i put into service  |
| _____ 10 utilize    | j existing as an essential constituent or characteristic                                  |



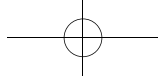
**2 Complete the following expressions or sentences by using the target words listed below with the help of the Chinese in brackets. Change the form if necessary.**

Target Words				
accompany	attempt	capability	communicate	complex
distribute	exploit	identify	instance	interpretation
involve	networking	parameter	physically	physically
predictable	process	profile	range (from... to)	require
site	specification	straightforward	symbolic	target
technical	whereas			

- 1 a(n) \_\_\_\_\_ (象征的) gesture of love
- 2 The publisher \_\_\_\_\_ (分发) the book in Asia.
- 3 A “\_\_\_\_\_” (地点) is a place, and so a website.
- 4 a(n) \_\_\_\_\_ (复杂的) network of systems
- 5 be used to \_\_\_\_\_ (识别) potential terrorists
- 6 deal the matter with him \_\_\_\_\_ (完全地)
- 7 start with a pretty \_\_\_\_\_ (直截了当) question
- 8 beyond the \_\_\_\_\_ (功能) of the computers
- 9 hit the \_\_\_\_\_ (目标) at a distance
- 10 the person never \_\_\_\_\_ (尝试) to do anything more
- 11 a highly sophisticated \_\_\_\_\_ (过程)
- 12 work within the \_\_\_\_\_ (限定因素) of time and budget
- 13 thanks for your kind \_\_\_\_\_ (解释)
- 14 use many \_\_\_\_\_ (专业的) terms
- 15 Prices \_\_\_\_\_ (变化范围) from 340 U.S. Dollars to 390 U.S. Dollars.
- 16 \_\_\_\_\_ (开拓) a new market in the city
- 17 be absorbed in the social \_\_\_\_\_ (社交网络)
- 18 \_\_\_\_\_ (涉及) unnecessary extra charges
- 19 only one \_\_\_\_\_ (实例) out of many
- 20 get to know more about the \_\_\_\_\_ (具体的细节) of the wedding
- 21 \_\_\_\_\_ (陪伴) with her to watch movies
- 22 the only thing \_\_\_\_\_ (可预言的) about life
- 23 learn the \_\_\_\_\_ (概要) of the project

**3 Read the sentences in the box. Pay attention to the parts in bold.**

Target Sentence Patterns
1 Each of these attacks <b>requires a different set of skills and targets a different set of vulnerabilities.</b>



- 2 Another example of a known vulnerability is the ability to communicate over the Internet; **enabling this capability**, you **open an access path to** unknown and untrusted entities.
- 3 Unknown vulnerabilities, which the owner or operator of a system is not aware of, may be the result of poor engineering, or may **arise from unintended consequences** of some of the needed capabilities.
- 4 These can **range from** poor password protection to **leaving a computer turned on** and physically **accessible** to visitors in the office.
- 5 Attempts to **make** those passwords **more complex** by replacing letters with numbers, such as replacing the letter O with the number zero, don't make the task **much harder**.
- 6 It's **important to** recognize **that** the end goal of unauthorized access varies **depending on** the UU's motivations.
- 7 **One way to do** this fairly **effectively** is through the use of a **so-called** Trojan horse program, which installs the malicious program without the knowledge or consent of the user.
- 8 **Make sure** your antivirus software is up-to-date and check frequently **to see if** there are new virus definitions **available**.

**Now complete the paragraph by translating the Chinese in brackets. You may refer to the expressions and the sentence patterns listed above.**

When it comes to cloud computing, it is often worried that cloud computing is not reliable, the worries \_\_\_\_\_ (从……到) “I lose control over the system with cloud computing” to “My files are not secure with cloud computing”. Actually the worries \_\_\_\_\_ (来自于对……误解) of cloud computing. Although the security of cloud computing \_\_\_\_\_ (留下很多问题没有得到解决), it \_\_\_\_\_ (打开了通道) the future development of computers. Hence a better understanding of a new technology \_\_\_\_\_ (需要有新的思想).

**4 Translate the following sentences from Text 1 into Chinese.**

- 1 Some people claim that hackers are good guys who simply push the boundaries of knowledge without doing any harm (at least not on purpose), whereas “crackers” are the real bad guys.

---



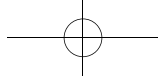
---

- 2 This can refer to gaining access to the stored contents of a computer system, gaining access to the processing capabilities of a system, or capturing information being communicated between systems.

---



---



3 Unknown vulnerabilities, which the owner or operator of a system is not aware of, may be the result of poor engineering, or may arise from unintended consequences of some of the needed capabilities.

---



---

4 Another type of attack is one that is preprogrammed against specific vulnerabilities and is launched without any specific target—it is blasted out shotgun style with the goal of reaching as many potential targets as possible.

---



---

5 Also, consider getting a hardware firewall and limiting the flow of data to and from the Internet to only the few select ports you actually need, such as email and Web traffic.

---



---

## Reading: Text 2

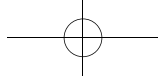
### 1 Match the words with their definitions.

- |          |             |   |   |
|----------|-------------|---|---|
| _____ 1  | snatch      | a | something done in order to deceive somebody |
| _____ 2  | trinity     | b | someone or something that is dangerous      |
| _____ 3  | commodity   | c | increase in number or quantity              |
| _____ 4  | devious     | d | grab or seize quickly                       |
| _____ 5  | trick       | e | stop or halt                                |
| _____ 6  | standstill  | f | group of three things or people             |
| _____ 7  | menace      | g | pollute                                     |
| _____ 8  | specimen    | h | a product that is bought and sold           |
| _____ 9  | contaminate | i | roundabout; not straightforward             |
| _____ 10 | multiply    | j | something taken as an example of its group  |

### 2 Complete the following expressions or sentences by using the target words listed below with the help of the Chinese in brackets. Change the form if necessary.

Target Words				
advert	blur	compromise	convert	criminal
cunning	daunting	disrepute	emergence	gang
harness	humble	ingenious	interchangeably	malfunction
malicious	notoriety	patch	recipient	recognition
replicate	secure	sinister	snatch	sophisticated
spiral	squeeze	stem	vulnerability	



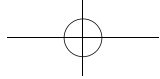


- 1 throw away a(n) \_\_\_\_\_ (损坏的) computer
- 2 earn somebody considerable \_\_\_\_\_ (恶名)
- 3 be used \_\_\_\_\_ (可互换地)
- 4 A computer has \_\_\_\_\_ (发生故障).
- 5 \_\_\_\_\_ (挤) milk into the bottle
- 6 a(n) \_\_\_\_\_ (有独创性的) solution to the problem
- 7 China's \_\_\_\_\_ (出现) as a great power
- 8 of \_\_\_\_\_ (卑微的) birth
- 9 \_\_\_\_\_ (狡猾的) men often pass for wise.
- 10 exploit their \_\_\_\_\_ (弱点) to fight them
- 11 a suspected \_\_\_\_\_ (罪犯)
- 12 a jacket with leather \_\_\_\_\_ (补丁) on the elbows
- 13 the \_\_\_\_\_ (阴险的) looks on his face
- 14 This is a(n) \_\_\_\_\_ (艰巨的) challenge.
- 15 the virus that can \_\_\_\_\_ (复制) itself
- 16 His \_\_\_\_\_ (恶毒的) gossip caused much mischief.
- 17 The path \_\_\_\_\_ (盘旋) up the mountain.
- 18 a(n) \_\_\_\_\_ (安全的) operating system
- 19 \_\_\_\_\_ (使模糊) my vision
- 20 \_\_\_\_\_ (阻止) the spread of an epidemic
- 21 fall into \_\_\_\_\_ (坏名声)
- 22 solve \_\_\_\_\_ (复杂的) electrical problems
- 23 \_\_\_\_\_ (利用) natural resources
- 24 write a personal note to each \_\_\_\_\_ (收件人)
- 25 \_\_\_\_\_ (转换) holdings into shares

**3** Read the sentences in the box. Pay attention to the parts in bold.

**Target Sentence Patterns**

- 1 But an expert programmer can sometimes **figure out** how to make a computer malfunction in a creative way, **so that it provides access to secure parts of a system, or shares protected data.**
- 2 Many modern specimens of malicious code, **however**, use a mixture of tricks to **cheat their way onto** computer systems, **blurring the line between worms and viruses.**
- 3 **There is evidence that** virus writers can earn large amounts of money by **leasing access to** networks of compromised computers—often **referred to as** “botnets”.
- 4 **This makes it far more difficult for** spam hunters to block the messages at source and catch the offenders.
- 5 **Once considered a fairly minor problem**, spam is rapidly spiraling out of control, and **much more than half of all email messages** are now thought to consist of unwanted advertising messages.
- 6 Some genuine sites have even proven vulnerable to software bugs **that can be exploited to capture information from regular users.**



- 7 As the number of computers networks has grown, **so have the possibilities for more serious misuse.**
- 8 **And it is not just ordinary desktop computers that are under threat.**

Now complete the paragraph by translating the Chinese in brackets. You may refer to the expressions and the sentence patterns listed above.

\_\_\_\_\_ (有证据表明) that as the number of web users has grown, \_\_\_\_\_ (黑客的数量也有很大增长). Computer hackers \_\_\_\_\_ (往往被称之为) the major threat to the Internet as they can deliver dangerous malware to your computer and \_\_\_\_\_ (损坏你的计算机) or \_\_\_\_\_ (获取你的信息). They can also try to \_\_\_\_\_ (进入你的计算机) if you are not protected with a firewall.

**4 Translate the following sentences from Text 2 into Chinese.**

1 Seemingly harmless programming errors can be exploited to force entry into a computer and also provide the weak spots that allow computer worms and viruses to multiply.

\_\_\_\_\_

\_\_\_\_\_

2 When a software vulnerability is revealed, it is often a race against the clock to apply the correct software patch before an attacker can convert the bug into an “exploit” that can be used to cause major damage.

\_\_\_\_\_

\_\_\_\_\_

3 The simplest phishing tricks try to deceive a target into sending money as part of a get-rich-quick scheme. But phishing tricksters are also getting more devious and recent scams pose as customer service emails and send users to fake banking or commercial websites where they are invited to “re-enter” their account information.

\_\_\_\_\_

\_\_\_\_\_

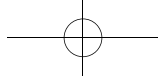
\_\_\_\_\_

4 Along with spam and phishing, spyware represents the third of an unhappy trinity of Internet pests. These harmful and secret programs typically find their way onto a computer system alongside another, often free, software application, although some can also exploit software bugs to get onto a machine.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



- 5 While the Internet has transformed global communication beyond recognition, the arms race between those intent on harnessing its power for criminal purposes and those tasked with preventing them has only just begun.
- 
- 
- 

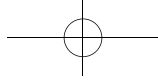
## Reading: Text 3

### 1 Match the words with their definitions.

- |          |                |          |  |
|----------|----------------|----------|--|
| _____ 1  | category       | <b>a</b> | make a copy of information on your computer  |
| _____ 2  | premises       | <b>b</b> | arrange something, especially computer equipment, so that it works with other equipment    |
| _____ 3  | generic        | <b>c</b> | the amount or share of something that is given to someone or used for a particular purpose |
| _____ 4  | infrastructure | <b>d</b> | the building and land that a shop, company, etc. uses                                      |
| _____ 5  | telecommute    | <b>e</b> | a product that does not have a trademark   |
| _____ 6  | database       | <b>f</b> | a group of people or things that all have the same particular qualities                    |
| _____ 7  | configure      | <b>g</b> | a general idea about a type of a thing or a person   |
| _____ 8  | back up        | <b>h</b> | a large amount of data stored in a computer system so that you can find and use it easily  |
| _____ 9  | abstraction    | <b>i</b> | work for a company at home using a computer connected to the main office                   |
| _____ 10 | allocation     | <b>j</b> | basic facilities which function as communication and power supplies and so on              |

### 2 Complete the following expressions or sentences by using the target words listed below with the help of the Chinese in brackets. Change the form if necessary.

Target Words				
access	accessibility	allocate	applicable	automate
back up	carbon	cater	certify	check
code	developer	emission	flexibility	hack
hazardous	host	incur	irrespective	maximum
minimal	mobile	modify	nominal	on offer
on-demand	opt	outage	prone to	provision
ready-made	reliable	sync	tailor	uptime
whereabouts				

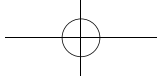


- 1 \_\_\_\_\_ (不管) of their age and education
- 2 The program must \_\_\_\_\_ (迎合) to the needs of your customers.
- 3 \_\_\_\_\_ (易于) to develop lung cancer
- 4 \_\_\_\_\_ (选择) for one style or the other
- 5 He supplies the \_\_\_\_\_ (最大的) amount of information.
- 6 These product orders should be \_\_\_\_\_ (编号).
- 7 the \_\_\_\_\_ (提供) of facilities for children
- 8 a restaurant \_\_\_\_\_ (合适于) for families
- 9 the need for a tighter \_\_\_\_\_ (检查) on arms sales
- 10 \_\_\_\_\_ (现成的) excuse
- 11 The aircraft has been \_\_\_\_\_ (改进) and improved.
- 12 provide treatment \_\_\_\_\_ (所要求的)
- 13 the \_\_\_\_\_ (去向) of the missing documents
- 14 \_\_\_\_\_ (有害的) waste must be appropriately dealt with.
- 15 The terrible damage has been \_\_\_\_\_ (遭受到了).
- 16 Few of the rules are \_\_\_\_\_ (适合于) to the country.
- 17 an industrial \_\_\_\_\_ (开发商)
- 18 a whole range of services \_\_\_\_\_ (所提供的)
- 19 \_\_\_\_\_ (主持) a talk show
- 20 It is free or for a \_\_\_\_\_ (极小的, 象征性的) charge.
- 21 get these accounts \_\_\_\_\_ (核证)
- 22 a highly \_\_\_\_\_ (自动化) factory
- 23 a power \_\_\_\_\_ (断供期)
- 24 Demand and supply are out of \_\_\_\_\_ (同步一致).
- 25 The evidence can \_\_\_\_\_ (证实) his story.
- 26 a great victory with \_\_\_\_\_ (最小的) price
- 27 a highly \_\_\_\_\_ (流动的) society

**3** Read the sentences in the box. Pay attention to the parts in bold.

**Target Sentence Patterns**

- 1 Any cloud should have the following characteristics **irrespective of whether** it is private or public and **irrespective of the type of service** it offers.
- 2 It should be able to **cater to the needs of clients** without having to involve clients into management of the service.
- 3 Thus, you save the environment while also saving on **the expenses incurred due to a demand for expansion**.
- 4 This saves you the **trouble of adding one or more computers to your infrastructure for the purpose of** storing the database(s) used by the code.
- 5 Your employees can access the cloud—**public or private—from any corner of the world** and can work from their homes.
- 6 As **of the characteristics of cloud computing is its flexibility**, you can quickly access more resources if you need to expand your business.
- 7 Other than this, clouds are less **prone to hacks** and DdoS attacks as people don't know the **whereabouts** of your data.



Now complete the paragraph by translating the Chinese in brackets. You may refer to the expressions and the sentence patterns listed above.

\_\_\_\_\_ (不管) the core structure is popular or is unpopular, the fact remains evident that it will \_\_\_\_\_  
 \_\_\_\_\_ (使用户避免这样的麻烦) of computer collapse. Hence the design of the core structure \_\_\_\_\_ (迎合了需求) clients who can work from their homes \_\_\_\_\_ (其目的就是) making full use of time.

**4 Translate the following sentences from Text 3 into Chinese.**

1 One can define cloud computing as a pay-per-use model for enabling on-demand access to reliable and configurable resources that can be quickly provisioned and released—with minimal consumer involvement in terms of management.

---



---



---

2 As cloud computing can always be used to re-provisioning of resources, when you need to expand, you need not buy the infrastructure to increase the carbon emissions by way of using more electricity to cool off the computer resources.

---



---



---

3 This means they need not drive to the business premises. This saves them fuel and reduces carbon emissions, which in turn, saves the environment.

---



---

4 In case of outage, your customers can use the backup servers that sync with the main ones as soon as they are up.

---



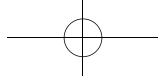
---

5 Other than this, clouds are less prone to hacks and DdoS attacks as people don't know the whereabouts of your data.

---



---



## Reading: Text 4

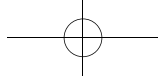
### 1 Match the words with their definitions.

- |                        |   |
|------------------------|---|
| _____ 1 interactivity  | a not connected to the Internet   |
| _____ 2 subscription   | b the creation of a virtual (rather than actual) version of something, such as an operating system, a server, a storage device or network resources |
| _____ 3 offline        | c the state of having an effect on each other   |
| _____ 4 downtime       | d can be carried out  |
| _____ 5 architecture   | e an amount of money paid regularly to obtain service   |
| _____ 6 virtualization | f a simple drawing which consists mainly of lines and is used to explain how a machine works  |
| _____ 7 executable     | g the structure of a computer system and the way it works   |
| _____ 8 diagram        | h a model for something that explains it or shows how it can be   |
| _____ 9 equation       | i time when a computer is not working   |
| _____ 10 paradigm      | j a mathematical statement saying that two amounts or values are the same   |

### 2 Complete the following expressions or sentences by using the target words listed below with the help of the Chinese in brackets. Change the form if necessary.

Target Words				
activate	aggregate	analogy	asset	browser
centralize	clone	collaboration	compatible	compromise
crash	crucial	derive	differential	distribute
download	facility	implement	in-house	innovative
install	integrate	laptop	license	log
loose	mine	minimum	monitor	pack
potential	replacement	specific	static	substantially
update	upgrade			

- A(n) \_\_\_\_\_ (类比) is drawn between the two things.
- Cats and birds are seldom \_\_\_\_\_ (协调的).
- \_\_\_\_\_ (分发) the prizes among the winners.
- \_\_\_\_\_ (执行) a new policy to help the unemployed
- The function can be \_\_\_\_\_ (激活) anytime.
- a(n) \_\_\_\_\_ (静止的) view of the world
- The audiences \_\_\_\_\_ (总计达到) a million people.
- a(n) \_\_\_\_\_ (一模一样的复制品) of a real panda
- look for a(n) \_\_\_\_\_ (革新的) way

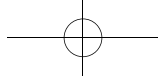


- 10 try to find the \_\_\_\_\_ (替代品) of a damaged desk
- 11 Their business \_\_\_\_\_ (突然垮了).
- 12 Their equality is \_\_\_\_\_ (受到损害).
- 13 \_\_\_\_\_ (挖掘有价值的) for detailed information
- 14 a bridge \_\_\_\_\_ (坚固的) enough to last a hundred years
- 15 He is a national \_\_\_\_\_ (宝贵的人).
- 16 \_\_\_\_\_ (使集中) power in him
- 17 airport \_\_\_\_\_ (设施)
- 18 He has to \_\_\_\_\_ (松开) his hold.
- 19 \_\_\_\_\_ (监听) his conversation
- 20 help individuals \_\_\_\_\_ (使适应, 融合于) into the community
- 21 From his father he \_\_\_\_\_ (获得) his enthusiasm for sports.
- 22 \_\_\_\_\_ (修订, 更新) a textbook
- 23 \_\_\_\_\_ (下载) the material to your computer
- 24 \_\_\_\_\_ (提高) the pay and status of the teacher
- 25 They are only \_\_\_\_\_ (批准) for beer.
- 26 pay \_\_\_\_\_ (级差的) rents according to their income
- 27 \_\_\_\_\_ (安装) a new computer in the office
- 28 practice each day for a(n) \_\_\_\_\_ (最少的) of 30 minutes
- 29 a lot of company will do \_\_\_\_\_ (内部的) training
- 30 a(n) \_\_\_\_\_ (重要的) decision

**3** Read the sentences in the box. Pay attention to the parts in bold.

**Target Sentence Patterns**

- 1 The websites turn into blogs and **the blogs were aggregated together into large collections.**
- 2 **The term is derived from the way in which** the Internet is often represented into the network diagrams.
- 3 The current cloud computing architecture **involves the existence of data centers** that are able to provide services to the clients **located all over the world.**
- 4 **On a long term basis,** the subscription fee may be more expensive than buying the hardware.
- 5 In this context, the service quality **becomes crucial** and the need of the backups **is vital.**
- 6 *Virtualization* allows **a rapid replacement of a compromised server** located into the cloud without major costs or damages.
- 7 The downtime for computers in the cloud **could be substantially reduced** because it is very easy to create a clone by using an image.
- 8 Cloud computing is still at the beginning so **the list remains wide open for new entries.**



Now complete the paragraph by translating the Chinese in brackets. You may refer to the expressions and the sentence patterns listed above.

Although the potential of e-business \_\_\_\_\_ (有很大的前景), it is often plagued by computer viruses. The term computer viruses \_\_\_\_\_ (来自这样一个方法) the virus “infects” the executable file or program. Hence developing a way to deal with computer viruses \_\_\_\_\_ (非常重要). But if we find the way, the threat the virus poses \_\_\_\_\_ (会大大降低).

**4 Translate the following sentences from Text 4 into Chinese.**

1 The term is derived from the way in which the Internet is often represented into the network diagrams.

---



---

2 The current cloud computing architecture involves the existence of data centers that are able to provide services to the clients located all over the world.

---



---

3 This goes to reduced effects of loosing some hardware items, like a laptop, for example.

---



---

4 *Virtualization* allows a rapid replacement of a compromised server located into the cloud without major costs or damage.

---



---

5 Cloud computing is still at the beginning so the list remains wide open for new entries.

---



---

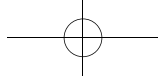
## Listening: Lecture 1

Listen to Lecture 1 and answer the following questions.

### Word Bank

boundary /'baʊndəri/ *n.* 边界  
 Ten Commandments /kə'mɑ:ndmənt/ 十诫  
 thou /ðəʊ/ *pron.* (古/诗) 汝, 尔  
 shalt /ʃəlt/ *v.* (古/诗) you shall 的古时用语  
 snoop /snu:p/ *v.* 窥探  
 appropriate /ə'prəʊpriət/ *v.* 盗用



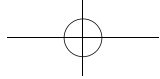


- 1 What is the purpose of the Ten Commandments of Computer Ethics?  
\_\_\_\_\_
- 2 Why do ethical issues become more important?  
\_\_\_\_\_
- 3 Which rule is about the way to avoid plagiarism?  
\_\_\_\_\_
- 4 Which rule do hackers mainly break?  
\_\_\_\_\_
- 5 What are the main principles behind the Ten Commandments of Computer Ethics?  
\_\_\_\_\_
- 6 How is Lecture 1 different from Texts 1 and 2 in terms of content?  
\_\_\_\_\_
- 7 What is the title of the lecture you may suggest?  
\_\_\_\_\_

## Listening: Lecture 2

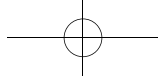
Watch the video clip of Lecture 2 and answer the following questions.

<b>Word Bank</b>	<p><b>anonymous</b> /ə'nonɪməs/ <i>a.</i> 匿名的</p> <p><b>ravage</b> /'rævɪdʒ/ <i>v.</i> 毁坏</p> <p><b>legion</b> /'li:dʒən/ <i>a.</i> 众多的</p> <p><b>hacker</b> /'hækə/ <i>n.</i> 黑客</p> <p><b>newsroom</b> /'nju:zrʊm/ <i>n.</i> 新闻编辑室</p> <p><b>armband</b> /'ɑ:mbænd/ <i>n.</i> 臂章; 袖标</p> <p><b>Rupert Murdoch's News Corp.</b> 默多克新闻集团 (当今世界上规模最大的综合性传媒之一)</p> <p><b>inchoate</b> /ɪn'keɪt/ <i>a.</i> (想法、计划等) 刚开始形成的</p> <p><b>anarchism</b> /'ænəkɪzəm/ <i>n.</i> 无政府主义</p> <p><b>hubris</b> /'hju:brɪs/ <i>n.</i> 傲慢</p> <p><b>configuration</b> /kən'fɪgə'reɪʃən/ <i>n.</i> 配置</p> <p><b>Turin</b> /tjʊ'rɪn/ 都灵 (意大利西北部城市)</p> <p><b>CarderPlanet</b> 某一犯罪网站</p> <p><b>off-the-shelf</b> <i>a.</i> 现成的; 成品的</p> <p><b>malware</b> /'mælweə/ <i>n.</i> 恶意软件</p> <p><b>out-of-the-box</b> <i>a.</i> 开箱即用的</p> <p><b>deploy</b> /dɪ'plɔɪ/ <i>v.</i> 部署; 使用</p> <p><b>entrepreneurial</b> /,ɒntreɪprə'nɜ:riəl/ <i>a.</i> 富于企业家精神的</p> <p><b>axiomatic</b> /,æksɪə'mætɪk/ <i>a.</i> 不需证明的</p> <p><b>dodgy</b> /'dɒdʒi/ <i>a.</i> 不可靠的; 狡猾的</p> <p><b>rip off</b> 宰客</p>
------------------	--



escrow /'eskru:/ **system** 第三方中介付款系统  
 spree /sprɪ:/ *n.* 狂欢, 作乐  
 stash /stæʃ/ *v.* 存放; 藏匿  
 aka /,eɪ keɪ 'eɪ/ (also known as) 亦称为  
 Sri Lanka 斯里兰卡 (亚洲国家名)  
 Tamil /'tæmɪl/ *n.* 泰米尔人  
 interrogate /ɪn'terəgeɪt/ *v.* (长时间地) 审问  
 asylum /ə'saɪləm/ *n.* (政治) 避难  
 pirate /'paɪərət/ *v.* 盗用, 剽窃  
 incremental /,ɪŋkrɪ'mentl/ *a.* 增加的  
 mastermind /'mɑ:stəmaɪnd/ *n.* (尤指犯罪活动的) 出谋划策者  
 Idaho /'aɪdəhəʊ/ 爱达荷州 (美国州名)  
 Santa Clara /'sæntə 'kleərə/ 圣克拉拉 (美国加利福尼亚州西部城市)  
 inveterate /ɪn'vetərət/ *a.* 成癖的, 上瘾的  
 fraudster /'frɔ:dstə/ *n.* 骗子; 诈骗犯  
 Nigeria /naɪ'dʒɪəriə/ 尼日利亚 (非洲国家名)  
 prosaically /prəʊ'zeɪ-ɪkli/ *ad.* 无想象力的; 枯燥无味地; 平凡地  
 Ankara /'æŋkərə/ 安卡拉 (土耳其首都)  
 geek /gi:k/ *n.* 极客  
 suave /swɑ:v/ *a.* 娴熟的  
 Asperger's /'æspɜ:ɡə/ *n.* 阿斯波哥尔综合症  
 autism /'ɔ:tɪzəm/ *n.* 孤独症  
 the Pentagon /'pentəɡən/ 五角大楼, 美国国防部  
 dupe /dju:p/ *v.* 欺骗; 愚弄  
 punitive /'pjʊ:nɪtɪv/ *a.* 惩罚的

- 1 Who is the mysterious sponsor or “the Anonymous”?  
\_\_\_\_\_
- 2 According to the lecturer, what should we do besides putting a huge amount of money into cybersecurity for the most extraordinary technical solution?  
\_\_\_\_\_
- 3 How do the purchaser and the vendor do business on the CarderPlanet?  
\_\_\_\_\_
- 4 According to the lecturer, what kind of hackers should not be thrown into jail?  
\_\_\_\_\_
- 5 What is the solution to the hacker problem according to the lecturer?  
\_\_\_\_\_
- 6 In which aspects is the lecture related to Texts 1 and 2?  
\_\_\_\_\_
- 7 What is the title of the lecture you may suggest?  
\_\_\_\_\_



## Listening: Lecture 3

Watch the video clip of Lecture 3 and answer the following questions.

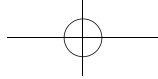
**Word Bank** app (application) 应用程序

- 1 What is the function of the app “Earth Fortune”?  
\_\_\_\_\_
- 2 Why do a lot of kids find it difficult to make games?  
\_\_\_\_\_
- 3 Where does the lecturer put his apps?  
\_\_\_\_\_
- 4 Why did the lecturer start an app club?  
\_\_\_\_\_
- 5 What is the big challenge to the iPad program?  
\_\_\_\_\_
- 6 What is the title of the talk you may suggest?  
\_\_\_\_\_
- 7 Will the lecturer become a potential hacker? Why, or why not?  
\_\_\_\_\_

## Listening: Lecture 4

Watch the video clip of Lecture 4 and answer the following questions.

**Word Bank** hype /haɪp/ *n.* 大肆宣传  
 forgery /'fɔ:dʒəri/ *n.* 伪造; 伪造物  
 infrastructure /'ɪnfə,streɪktʃə/ *n.* 基础设施  
 EC2 (Elastic Compute Cloud) 弹性云计算平台 (亚马逊提供的商业服务)  
 instantiate /ɪn'stænfɪeɪt/ *v.* 示例, 举例说明  
 cache /kæʃ/ *n.* 电脑高速缓冲存储器  
 entropy /'entropi/ *n.* 平均信息量  
 API (Application Program Interface) 应用程序界面  
 audit log 审计日志



- 1 What is the most important obstacle to the adoption of cloud computing?  
\_\_\_\_\_
- 2 What are the common problems related to security?  
\_\_\_\_\_
- 3 What is the result of lacking sufficient random numbers when it comes to the entropy?  
\_\_\_\_\_
- 4 Why does the lecturer say that the infrastructure service is both less secure and more secure than software service?  
\_\_\_\_\_
- 5 How shall we apply the cloud computing according to the lecturer's conclusion?  
\_\_\_\_\_

## Listening: Lecture 5

Watch the video clip of Lecture 5 and answer the following questions.

### Word Bank

**Canonical** 一家私营公司的名称（由南非的企业家马克·沙特尔沃思创建，主要为了促进开源软件项目）

**Ubuntu** 一个以桌面应用为主的 Linux 操作系统

**strategist** /'strætɪdʒɪst/ *n.* 战略家

**disruptive** /dɪs'rʌptɪv/ *a.* 制造混乱的

**innit** /'ɪnɪt/ *int.*（英，口）（相当于 isn't it）是否，是不是

**utility** /ju:'tɪlɪti/ *a.* 公用的

**Cloud Pyramid** /'prɪəməɪd/ 云计算按功能区分的视觉表现，包括设备层、平台层和应用层

**analogy** /ə'nælədʒi/ *n.* 类比

**transition** /træn'zɪʃən/ *n.* 过渡；转变

**bespoke** /bɪ'spəʊk/ *a.* 订制的

**John McCarthy** 约翰·麦卡锡（人工智能之父）

**grid** /grɪd/ *n.* 网格，输电网

**commodity** /kə'mɒdɪti/ *n.* 商品，货物

**Harvey Hubbell** 哈维·哈贝尔（美国 Hubbell 集团创始人，拉线开关发明者）

**ubiquitous** /ju:'bɪkwɪtəs/ *a.* 普遍存在的

**hypothesis** /haɪ'pɒθəsɪs/ *n.* 假设

**CRM (Customer Relationship Management)** 客户关系管理

**differentiation** /,dɪfə'renʃi'eɪʃən/ *n.* 区别

**feline** /'fi:lɪn/ *a.* 猫的

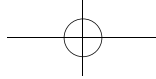
**body armor** /'a:mə/ 防弹衣

**virtualization** /,vɜ:tʃuəlaɪ'zeɪʃən/ *n.* 虚拟化技术

**recap** /'ri:kæp/ *v.* 重述要点

**rebrand** /ri:'brænd/ *v.* 给……一个新名称

**gibberish** /'dʒɪbərɪʃ/ *n.* 乱语



### Part 1

1 Is the taxi driver's definition about the cloud computing correct? Why or why not?

2 What is the main process of the transformation of IT infrastructure?

3 Why did some people say that computing power is like electricity?

### Part 2

4 What promote the development of the IT industry?

5 What factors drive the transition of industry from as a product world to as a service world?

6 What is the purpose of the lecturer by doing kitten experiment at the end of his speech?

