

Part One A Brief Introduction to Computer Networks

第一部分 网络介绍

Unit One Knowledge of Networks

1. Computer Networks

- ① The computer networks are including LANs, MANs and WANs.
- ② A LAN consists of all the computers confined within a local area, say a few square miles, such as a corporation or a university. LANs are characterized by the following:

Fast data rate, up to 100 megabits per second (Mbps) or over;

Low error rate, 10^{-8} to 10^{-1} errors per bit (Epb);

Simple routing;

Moderate distance, within several miles;

Innovative technology.

- ③ A MAN is actually a LAN of large size, such as the Community Antenna Television (CATV) network. As far as hardware or software design is concerned, a MAN is not different from a LAN. Taking a token ring LAN for example, the distance between two adjacent nodes can be 2km. With 360 nodes maximum, the perimeter can be as long as 720km or 450 miles. In other words, it is possible to have a LAN that is as large as a city.
- ④ WAN technology means that computers can be situated at different location all over the world. In a WAN, when the data bits arrive at the destination node, the transmission stops right there. Two PCs may be interconnected in a room as a LAN. If one PC is moved to New York and the other one stays in San Francisco,

the network applications still run on the network and no modifications are needed in either hardware or software. Hence, the WANs and LANs really differ in technology but not in size.

网络知识

计算机网络

计算机网络包括局域网 (LANs)、城域网 (MANs) 和广域网 (WANs)。

一个局域网由本地几平方英里范围内，如一家公司或一所大学内的全部计算机组成。局域网的特点如下：

数据传输率高，可达 100 兆位/秒 (Mbps) 以上；

低错误率， 10^{-8} 到 10^{-1} 错误 / 位 (Epb)；

路径选择简单；

距离适中，在数英里之内；

技术创新。

城域网 (MAN) 实质上是规模较大的局域网，如社区有线电视 (CATV) 网络。就硬件或软件设计而言，城域网与局域网的设计并无区别。以令牌环为例，两个相邻节点的距离可以达到 2 公里。最多达 360 个节点的令牌环，其周长可达 720 公里或 450 英里。换言之，一个局域网可能有一个城市那么大。

广域网 (WAN) 技术可以使 (联网) 计算机分布于世界不同地点。在广域网中，当数据位传输到目的节点时，传输即终止。同一房间内的两台 PC 机可以联接成局域网。如果将其中一台 PC 机运到纽约，而另一台仍放在旧金山，那么我们无需对硬件或软件作任何修改，网络应用程序仍然可以在网络上运行。因此说广域网和局域网的真正差异是在技术上而不是在规模上。

2. Network Computer

The network computer, also known as the Internet toaster, Internet appliance or Internet device, is the low cost, no maintenance desktop device. It allows users to effortlessly connect to Internet and network resources. From it, they can share any resource and perform all computing tasks that they currently do on their PCs.

The network computer offers simplicity. Stripped of the hardware and software that complicate the PC life and only capable of network access and display, the network computer relies on the network for virtually all software, services, processing, data, and resources. It eliminates the continuous cycle of desktop hardware and software upgrades, pushing that burden instead onto the network.

- ③ Need the latest word processor or spreadsheet? Run it off the server. Want to save your work? Just send it off to the network, where it will be stored, secured, and backed up.

网络计算机

网络计算机，也叫因特网烤炉、因特网装置或因特网设备。

它是一种价格低廉、无需维护的桌面设备。它的用户不费力气就能与因特网和网络资源建立联接。由此通过因特网，这些用户能共享任何资源，在网络上完成所有目前在 PC 机上进行的计算任务。

网络计算机简化了应用。它放弃了使 PC 应用复杂化的软硬件，只保留网络访问与显示功能。实际上，网络计算机在下载软件、提供服务、工作处理及数据和资源方面全部都倚仗网络，从而避免了周而复始的桌面系统软硬件升级的麻烦，

而把这一升级重任推给了网络。

需要最新的字处理软件或电子表格软件吗？可以从服务器下载。想把你的工作保存吗？只需把它传送到网络进行存储、保护并做好备份。

3. Origin of Internet

The Internet is not the Information Superhighway that was praised in the early '90s. It started out as a way for UNIX computers to communicate with each other, locally at first and then over the phone lines.

The roots of the Internet are in the old ARPAnet, a network of military and civilian computers in the '70s, where today's Internet software was evolved. From there it grew to a network of government and university computers, and eventually PCs as they became more powerful and able to run UNIX software. So keep in mind when you use the Internet that it's the result of evolution, not creation.

- ③ ARPAnet can transfer both small and large texts (the e-mail and FTP in the present Internet respectively) between computers of "ARPAnet". Through it a computer can make use of resources on another remote computer (the Telnet in the present Internet).

因特网的起源

因特网不是指 90 年代初提出的信息高速公路。它最初是 UNIX 机之间通信的一种方法。先是区域性地，后来采用电话线联接。

因特网的前身是早期的阿帕网 (ARPAnet)。阿帕网是 70 年代由军用计算机和民用计算机构成的一个网络。今天的因特

网软件也由此演变而来。后来该网络发展成了政府和大学计算机网，当它们的功能增强并能运行 UNIX 软件时，该网络发展为 PC 网。所以，当你使用因特网时，要记住它是发展演变而来的，并非新的创举。

阿帕网能够在网络计算机之间传送大大小小的文本文件（对应当前互联网中的 FTP 文件和电子邮件）。通过阿帕网，任何一台计算机都可以访问另一台远程计算机上的资源（即当前因特网所指的远程登陆）。

4. Internet Connection

There are two different types of Internet connections. First, you might use a computer that is directly connected to the Internet. For example, you might be using a PC that is part of a network connected to the Internet. In such a case, your computer will be a full-fledged Internet host, with its own electronic address.

The other way to connect to the Internet is by using a terminal that is connected to an Internet host. In this case, the terminal itself—not being a computer—is not on the Internet. You simply use the terminal to access a computer that is on the Internet.

因特网的连接形式

因特网有两种不同的联接方式。第一种，计算机直接与因特网相连。例如，你使用的计算机有可能是联接到因特网上的某个网络的一部分。在这种情况下，你的这台计算机就会是一台正式的因特网主机，有它自己的电子地址。

与因特网联接还有另一种方式，即使用一台与因特网主机相联接的终端。在这种情况下，终端本身（终端不是计算机）并不在因特网上，用户只是利用终端去访问因特网上的某台计算机。

Unit Two Application of Internet

1. Downloading & Uploading Software

- ① One of the most popular things to do on-line is to download or “grab” software. This is when you order, demand that the other computer send you something from one of its hard drives. The software then beamed into your computer, where you can then play with it.
- ② Downloading is a bit confusing, and the following steps give you the necessary guidance:
 - a. Search for a file to steal, download.
 - b. Tell the other computer which file to send.
 - c. Tell it how to send it (the protocol).
- ③ A protocol is a method for sending a file between two computers. It ensures that the file gets there exactly as it was sent. The most popular protocol today is called Z-Modem. Others exist, Y-Modem, X-Modem, Kermit and others. Choose one that your communications package understands.
 - a. Tell it to start sending.
 - b. Tell your communications software to receive a file.
 - c. Go for it.
- ④ Technically, the “other computer” is called the host. You download from the host. It helps to think of the heavenly host, since they’re “up there” and you’re “down here”, and if they sent you anything, it would travel down. That’s how I remember that

downloading is the other computer sending you a file.

- ⑤ Downloading is not stealing. Most on-line systems exist to give you files. However, they usually want something in return. If you have any files to upload, or send to the other computer, it's not required but is appreciated.
- ⑥ Don't download software you know is stolen. This includes anything that you would otherwise have to pay money for at the store. For example, downloading a copy of 1 - 2 - 3 is illegal. It's theft. Also, such programs are usually infected with viruses.
- ⑦ Special software is available that scans anything you download for a virus. Most of the time, however, you can rest assured that programs you get aren't infected. All of the major on-line services and most reputable BBSs prescan their files to prevent against viruses.
- ⑧ To upload is to send a file to another computer. It works a lot like downloading, though the roles are reversed: You tell the other computer to prepare itself to receive a file, then you tell your communications software which file to send. As it goes with downloading, you instruct the other computer first, then tell your communications program to kick everything into gear.
- ⑨ Briefly, here are the steps:
 - a. Search for a file to upload.
 - b. Tell the other computer to prepare to receive a file.
 - c. Tell it how to receive (the protocol stuff).
 - d. It's ready to go.
 - e. Tell your communications software to send a file.
 - f. Go for it.

下 / 上传软件

用户在线进行得最多的操作，就是下载或“掠夺”软件。方法如下：你发出指令，请求其他计算机从它的一个硬盘驱动器上为你发送某些软件，这些软件被发送到你的计算机后，你就可以在计算机上运行它们了。

下载（downloading）程序令人迷惑，以下的步骤提供了必要的指导：

- a. 寻找需要的文件，下载。
- b. 告诉对方计算机要发送的文件名。
- c. 指示它如何发送文件（即协议）。

协议就是在两台计算机之间传送文件的一种方法，它保证文件的准确传送。目前最流行的协议是 Z-Modem。另外还有 Y-Modem、X-Modem、Kermit 以及其他协议。要选择你的通信软件理解的协议。

- a. 通知对方计算机开始发送。
- b. 通知你的通信软件接收文件。
- c. 开始接收。

从技术上讲，对方计算机称为主机，你是从主机下载文件。该方法会有助于理解：假设主机在天上，因为主机处于上方，你的计算机处于下方，所以，如果主机向你的计算机发送文件，则为向下传送。下载过程就是由对方的计算机向你的计算机发送文件，我就是这样记住的。

下载并不是偷窃。大多数在线系统都能提供供下载的文件。然而，它们通常都要求某种回报。如果你有好文件需要上传或发送给其他计算机，你会得到许可，但这并不是必须的。

- ⑥ 不要下载你明知是盗版的软件，这包括必须在商店付钱才能得到的软件。比如说，下载 Lotus1-2-3 软件是非法的，属于偷窃行为。另外，这类软件常常传染了病毒。
- ⑦ 现在有为下载的软件查找病毒的专用软件。不过，大多数情况下你都可以放心——你下载的软件没有被病毒感染过，因为，为防止出现病毒，所有大型联机服务系统和绝大多数有名的 BBS 系统都预先检查过文件。
- ⑧ 上载就是把文件发送给另一台计算机。虽然上载与下载的工作原理有很多相似之处，但所起的作用却恰恰相反。上载时，由你通知对方计算机准备接收文件，然后，再由你指示你的通信软件要发送哪一个文件；而下载时的情况则是：你先向对方计算机发出指令，然后再告诉你的通信软件做好接收的准备。
- ⑨ 简而言之，上载的步骤是：
 - a. 找出欲上载的文件；
 - b. 通知对方计算机准备接收文件；
 - c. 告诉对方计算机如何接收（即协议内容）；
 - d. 准备发送；
 - e. 通知你的通信软件发送文件；
 - f. 发送文件。

2. E-mailing

- ① With Internet, people can compose, send, and receive electronic mails. Many people get dozens of messages a day and consider it as their primary way of interacting with the outside world, far outdistancing the telephone and snail mail.
- ② E-mail is the most widely used service—you can exchange e-mail with millions of people all over the world. And people use e-mail

for anything they might use paper mail or the telephone for. Mail servers (programs that respond to e-mail messages) let you retrieve all sorts of information.

- ③ Mail, much more than any old Internet service, is connected to many non-Internet systems, which means that you can exchange mail with many people not on the Internet in addition to all the people who are on it.
- ④ Before you do mailing, you have to figure out your e-mail address so that you can tell it to people who want to get in touch with you. And you have to figure out some of their address so that you can write to them.
- ⑤ Internet mail address has two parts, separated by “@” (the “at” sign). The part before the @ is the mailbox, which is (roughly speaking) your personal name, and the part after is the domain, usually the name of the computer you use. Sometimes the domain used is the group that contains all the local computers.
- ⑥ The mailbox is usually your username (the name you use to log into your computer), so your address may be chen @ bc. org. Domain names are traditionally represented in uppercase (as in BC. ORG), and mailbox names in lowercase or mixed case (as in chen). If you’re sending a message to another user in your domain, you can leave out the domain part altogether when you type the address.
- ⑦ In order to e-mail your message, you can first apply for an Internet account and get an e-mail address.
- ⑧ Then you can install e-mail software, which are offered by the Internet Explorer of Software Company and the Communicator of Netscape Company.

- ⑨ After relevant arrangements, the main ones of which are to set your e-mail address, the address of the outgoing mail server and incoming mail server, you can send and receive mails.
- ⑩ Sending mail is easy. You run your mail program and type the address you want to send mail to. It may ask you for a Subject Line and then you can type your message, you can say anything you want, and it can be as long as you want.
- ⑪ E-mail is the most economical way of correspondence. You are charged on the basis of the time taken to send the e-mail in the Internet. It's destination makes no difference in the charge.
- ⑫ To save money, you'd better finish the letter before getting connected to the Internet.

发送电子邮件

通过因特网，人们可以创作、发送和接收电子邮件。许多人在一天之内收到成打的电子邮件，大大超过了电话和蜗牛式的普通邮件的数量，人们把电子邮件看做是与外界交流的主要方式。

- ② 电子邮件是应用最广的一项服务，你可以与全世界上百万人互发电子邮件。用信件或电话交流的任何内容也可以用电子邮件交流。邮件服务器（响应电子邮件的程序）使你能检索各类信息。

与其他 Internet 服务相比，电子邮件更多地连在非 Internet 系统上，这就意味着你不但能与网上的人联系，还能与网外的许多人交换邮件。

在邮寄之前，先要弄清楚你的电子邮件地址，告诉那些想与你联系的人。你也要弄清其他人的地址以便给他们发邮件。

邮件地址由两部分构成，由 @（at 符）分隔。@前的部分代表信箱，简单地讲就是你的个人标识名；@后的部分是域，

通常是你使用的计算机名。有时采用的域包括所有本地计算机共用的组合。

- ⑥ 信箱名通常就是你的用户名（即计算机的登录名），因此你的地址可能是 chen@bc. org 域名习惯以大写字母表示（如 BC. ORG），而信箱名通常小写（如 chen ）或大小写混用。如果你在域内向他人发送信息，你可省去地址中的域名部分。
- ⑦ 要发送邮件，首先得申请因特网账号及电子邮箱地址。
- ⑧ 在电脑中安装电子邮件软件——微软的 IE 和网景公司的 Communicator 等浏览器中包含了电子邮件组件。
- ⑨ 进行了相应的配置后——主要是设置你的邮件地址、邮件发送和接收服务器地址——你就可以收发电子邮件了。
- ⑩ 发送邮件十分简单。先运行邮件程序，然后键入接收邮件的地址。系统可能会让你键入主题行，然后你就可以输入信件内容了。你想写什么都可以，篇幅长短也任意。
- ⑪ 电子邮件是目前费用最低的一种通信方式。发一封电子邮件的费用就是按发邮件所占用上网时间来计算上网费用，而不论邮件的目的地。
- ⑫ 为了节省费用，可先写好信件后，再上网发送。

3. Internet Phone

- ① Internet Phone (IP) is to make phone calls with the help of the Internet. To make a phone, you'll have to observe the following steps. Firstly, it's necessary to have sound adapter, a microphone, an earphone and IP software in your computer. Secondly, start the IP software and connect it to the IP server. Choose your communicating partner in the user list and you can have conversations or word chat with your partner. Thirdly, if you want to talk with your friend, the two of you must appoint to get

connected to the same IP server at the same time.

- ② There are mainly four types of Internet phones: computer-to-computer, computer-to-telephone, telephone-to-computer and telephone-to-telephone. The charge is based on the time the phone call takes, no matter what place you have made the call to. So you can make international long distance calls at the cost of local calls.
- ③ There are many websites that offer Internet Phone service and Microsoft.com together with Dialpad.com tops the list. The free Internet phone served by the two sites will give you a good example of making Internet calls.
- ④ With such service offered by Microsoft.com, you can call the other computer and have voice communication. Here are the basic steps:
 - a. type www.hotmail.com into the address bar of the web browser to enter the free Hotmail homepage.
 - b. Click Sign Up Now and fill in the form of application. Click Sign Up to submit it after your filling in. If the content tallies with the request, you will have Sign Up Successful page.
 - c. Click MSN Messenger Service to enter MSN Messenger Service homepage.
 - d. Click "Download Now" , download software Messenger Service and install it according to the instruction.
 - e. After the installment, the communication homepage of MSN Messenger Service will appear and there also appears the green headlike icon in the taskbar.
 - f. Click "Sign-in" and type Sign-in Name and password.

- g. Click "Add" to note down additional contacts.
 - h. You can make sure whether your would-be contact is on the line whenever you double click the green headlike icon in the taskbar. Double click your on-line contact and click "Invite" in the dialogue box that pops up.
 - i. If your contact accepts your invitation, you can speak without any inhibitions, with him/her with your ear and the receiver.
- ⑤ It's not necessary to download any software through the service offered by Dialpad.com before you make the computer-telephone call all across the States free charge. But you'll have to follow the basic steps:
- a. Type www.dialpad.com in the address bar of the web browser before you have the first page in Dialpad.com.
 - b. Click "Join Now" for the registration. When the registration form is filled up, click "Send Application" for submission. If your registration tallies with requests, you will enter the page of "Congratulations" .
 - c. Click "Continue" to enter "My Phonebook" .
 - d. Click "Add New Contact" and fill in such information as the name, telephone number of your would-be contact. In this way, you'll have your own phonebook.
 - e. When you want to get in touch with any of your contact in your notebook, you need only to type your own name and password on the first page of Dialpad.com. When you have "My Phonebook", click the contact's phone icon and you are on the point of speaking freely with your contact.

- ⑥ It's undeniable that we have great inconvenience in making Internet phonecalls due to our narrow network bandwidth. But with the development of IT field, the relevant hardware and software problems will be tackled. Internet phone will be as convenient to make as household phone in the near future.

网络电话

网络电话就是利用因特网进行通话。拨打网络电话需遵循下列步骤：首先，必须在你的电脑中安装声卡、麦克风、耳机和 IP 软件。第二，上网后运行 IP 软件，连接到 IP 服务器，从用户清单中选择通话人与之通话或进行文字聊天。第三，如果想要与朋友打电话，则必须双方约定同时上网，并同时连接到同一 IP 服务器上。

网络电话主要有四种：电脑对电脑，电话对电话，电话对电脑，电话对电话。拨打网络电话的费用是按通话时间来计算的上网费用，而不论打向何处。因此，你可以用市话的费用打国际长途电话。

提供 IP 电话服务的网站有许多，其中以 Microsoft.com 和 Dialpad.com 最为突出。它们提供的免费网络电话服务为如何打网络电话作了很好的示范。

- ④ 利用 Microsoft.com 提供的这类服务，用户呼叫对方的计算机，并进行语音交流，以下是基本的步骤：
- 在浏览器的地址栏键入 www.hotmail.com，进入 Microsoft 提供的免费的 Hotmail 主页。
 - 点击“现在申请”，填写申请表。填完后，点击“申请”提交。如果填写的内容符合要求，就会出现“申请成功”页面。
 - 点击“MSN 通信服务”，进入“MSN 通信服务”主页。