

Network Fundamentals

网络基础



内容提要



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■ Network Classifications 网络分类

➤ 分类方法之一（基于覆盖范围）

- ✓ PAN (personal area network) 个人域网
- ✓ LAN (local area network) 局域网
- ✓ MAN (metropolitan area network) 城域网
- ✓ WAN (wide area network) 广域网

➤ 分类方法之二（基于开放与否）

- ✓ open network 开放式网络
- ✓ closed network (proprietary network) 封闭式网络（专有网络）

➤ 分类方法之三（基于网络拓扑，以下为比较流行的）

- ✓ bus topology 总线拓扑（结构）
- ✓ star topology 星型拓扑（结构）

■ Protocols 协议

- CSMA/CD (Carrier Sense, Multiple Access with Collision Detection) : 带冲突检测的载波侦听多址访问 (协议) , 适用于基于以太网 (Ethernet) 标准的总线网 (bus network) , 与无线星形网 (wireless star network) 不兼容
- CSMA/CA (Carrier Sense, Multiple Access with Collision Avoidance) : 带冲突避免的载波侦听多址访问 (协议) , 与 WiFi (无线保真) 联系紧密, 适用于无线星形网

■ Methods of Process Communication 进程间通信方法

- interprocess communication 进程间通信
 - ✓ client/server model: 客户机 / 服务器模型, 将进程扮演的角色定义为客户端和服务端, 前者向其他进程发出请求, 后者满足请求
 - ✓ peer-to-peer (P2P) : 对等模型, 进程之间互相提供服务和接受服务

语言点聚焦



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- The underlying software required to support such applications has grown from simple utility packages into an expanding system of network software that provides a sophisticated network-wide infrastructure. 支持这类应用所需的基本软件, 已经从简单的实用软件包发展成一个不断扩展的网络软件系统, 该系统提供了一个复杂的网络范围的基础设施。
- between a wireless headset and a smartphone or between a wireless mouse and its PC 无线耳机与智能手机之间, 或者无线鼠标与其PC (个人计算机) 之间。
- A MAN is a network of intermediate size, such as one spanning a local community. 城域网属于中型网络, 如覆盖一个本地社区的网络。

span: v. 横跨, 跨越; 持续; 包括

- a series of bridges spanning the river 横跨河流的一系列桥梁
- a professional career spanning four decades 持续了 40 年的职业生涯
- Hot spots can be found in individual residences, hotel and office buildings, small businesses, parks, and in some cases span entire cities. (8A/I) 在个人住宅、酒店、办公楼、小型企业、公园里都可以找到热点。在有些情况下, 热点覆盖整座城市。

- Another means of classifying networks is based on whether the network's internal operation is based on designs that are in the public domain or on innovations owned and controlled by a particular entity such as an individual or a corporation. 另一种网络分类方法依据的是，网络的内部操作是基于公共领域的设计，还是基于特定实体（如个人或公司）所拥有并控制的革新。句中的 public domain 有“不受专利权限限制（或保护）”“不受版权限制（或保护）”等意思。
- A network of the former type is called an open network; a network of the latter type is called a closed, or sometimes a proprietary network. 前一种类型的网络称为开放式网络，后一种类型的网络称为封闭式网络，有时也称为专有网络。

- communication throughout the Internet is governed by an open collection of standards known as the TCP/IP protocol suite 整个因特网的通信是由一组称为 TCP/IP 协议簇 的开放标准控制的。 TCP/IP 是 Transmission Control Protocol/Internet Protocol 的首字母缩略，常译为：TCP/IP协议，传输控制（协议） / 网际（或网间）协议。 protocol suite 常译为：协议簇，协议组。注意 suite 的读音 / swi:t / 。

suite: n. (同类物的) 系列，组，套

- a suite of software development tools 一套软件开发工具
- a nice suite of furniture 一套不错的家具
- Modern smartphones include a similar suite of applications. (1C/II) 现代智能手机包含一组类似的应用。

- Ethernet networks remain one of the most popular networking systems in use today. 以太网依然是今天在用的最流行的联网系统之一。

networking: n. 连网, 联网, 建网

- a collision-free and redundant networking environment (7B/II) 一个无冲突的冗余连网环境
 - wireless networking and mobile computing (9C) 无线联网与移动计算
 - The bus topology was fairly popular in the early years of networking. (7B/I) 总线拓扑在建网的早期年月相当流行。
- Today, the star configuration is popular in wireless networks where communication is conducted by means of radio broadcast and the central machine, called the access point (AP), serves as a focal point around which all communication is coordinated. 今天, 星型配置在无线网络中很流行。在无线网络中, 通信是通过无线电广播进行的, 被称为接入点的中央机器是协调所有通信的焦点。

- the development of protocol standards is an indispensable process in the development of networking technologies. 在联网技术的开发中, 协议标准的开发是一个必不可少的过程。

indispensable (to/for): a. 必不可少的, 必需的

- Knowledge is the indispensable condition of expansion of mind. 知识对开阔眼界是不可缺少的条件。
 - She was becoming indispensable to him. 他变得越来越离不开她了。
 - A good dictionary is indispensable for learning a foreign language. 一本好词典是学习外语必备的。
- In a bus network based on the Ethernet standards, the right to transmit messages is controlled by the protocol known as Carrier Sense, Multiple Access with Collision Detection (CSMA/CD). 在基于以太网标准的总线网中, 传输报文的权利由称为 CSMA/CD (带冲突检测的载波侦听多址访问) 的协议控制。

- This protocol dictates that each message be broadcast to all the machines on the bus. 该协议规定每条报文都要广播给总线上的所有机器。

dictate: v. 口授; 发号施令地规定, 命令

- to dictate terms of surrender 强制规定投降条件
- He dictated a letter to his secretary. 他向秘书口授信稿。
- The custom dictates that men should be clean-shaven. 习俗规定男人要刮干净胡子。

- If another machine also begins transmitting, both machines detect the clash and pause for a brief, independently random period of time before trying to transmit again. 如果另一台机器也开始传输, 那么两台机器都会检测到冲突, 并各自暂停一小段随机长的时间, 然后再次尝试传输。 independently random 表示彼此都是随机的, 彼此暂停的时间可能不一样。

- This is because a machine may be unable to detect that its transmissions are colliding with those of another. 这是因为一台机器可能无法检测到它的传输正在与另一台机器的发生冲突。

collide: v. 碰撞; 冲突, 抵触 → collision: n. 碰撞; 冲突, 抵触

- a collision-free and redundant networking environment (7B/II) 一个无冲突的冗余联网环境
- The car collided with the truck. 汽车与卡车互撞。
- They regularly collide over policy decisions. 他们经常在政策决策上发生冲突。
- the signals from the different machines are blocked from each other by objects or distance even though they can all communicate with the central AP (a condition known as the hidden terminal problem). 虽然不同的机器都能与中央接入点进行通信, 但它们彼此的信号被物体或距离阻隔了 (这种情况称为隐藏终端问题) 。

- Such policies are classified as Carrier Sense, Multiple Access with Collision Avoidance (CSMA/CA), many of which are standardized by IEEE within the protocols defined in IEEE 802.11 and commonly referred to as WiFi. 这种策略被归类为CSMA/CA (带冲突避免的载波侦听多址访问)，其中许多策略被 IEEE (美国电气和电子工程师协会) 在 IEEE 802.11 所定义的协议中标准化，这些协议常称为 WiFi (无线保真)。 WiFi (*Wireless Fidelity*)，亦作 Wi-Fi。
- If a busy channel is experienced during this process, the machine waits for a randomly determined period before trying again. 如果在这个过程中遇到信道繁忙，那么该机器会等待一段随机确定的时间，然后再重新尝试。
- Once this period is exhausted, the machine is allowed to claim a silent channel without hesitation. 一旦这段时间耗尽，该机器就被允许立即要求占用空闲信道。

- To solve this problem, some WiFi networks require that each machine send a short “request” message to the AP and wait until the AP acknowledges that request before transmitting an entire message. 为了解决这一问题，一些 WiFi 网络要求每台机器都向接入点发送简短的“请求”报文，并等待接入点确认请求，然后才传输完整的报文。

acknowledge: v. 承认；确认（收悉） → acknowledgment: n. 承认；确认

- hear all acknowledgments sent from the AP (7A/II) 监听到接入点发出的所有确认回音
- It is now generally acknowledged that he was innocent. 现在普遍承认他是无辜的。
- Please acknowledge receipt of this letter. 收信后请告知。

- even executing on the same machine via time-sharing/multitasking 甚至在同一台机器上通过分时 / 多任务处理方法执行。

time-sharing: n. & a. 分时 (的) ; multitasking: n. & a. 多任务 (处理) (的)

- time-sharing/multitasking computers (2B/II-4) 分时 / 多任务计算机
- a scheduler to coordinate time-sharing among transactions (2B/III) 协调事务间分时的调度程序
- to leverage multitasking to achieve higher throughput (9A/I) 充分利用多任务处理来提高吞吐量

- A popular convention used for interprocess communication is the client/server model. 进程间通信使用的一种流行规约是客户机 / 服务器模型。

- Another model is the peer-to-peer (often abbreviated P2P) model. 另一种模型是对等 (peer-to-peer, 常缩写为 P2P) 模型。P2P: 在计算机英语中, 有些首字母缩略词有用发音相同的数字代替单词的现象, 此处的“2”代替“to”。



- For example, applications of the peer-to-peer model include instant messaging in which people carry on a written conversation over the Internet as well as situations in which people play competitive interactive games. 例如，对等模型的应用包括人们通过因特网进行书面对话的即时通信，以及人们进行竞技性交互游戏的情况。 include 后面跟有两个由 as well as 连接的宾语，两个宾语均跟有定语从句。
- The swarm approach to file distribution is in contrast to earlier approaches that applied the client/server model 文件分发的蜂群方法与应用客户机 / 服务器模型的较早期方法截然不同。
- in cases of questionable legality, the lack of a central server makes legal efforts to enforce copyright laws more difficult 在合法性可疑的情况下，没有中央服务器会增加维护版权法的执法难度。 enforce the law 执法。

- You might often read or hear the term *peer-to-peer network*, which is an example of how misuse of terminology can evolve when technical terms are adopted by the nontechnical community. 你可能经常读到或者听到“对等网络”这个术语，这个术语就是当技术术语被非技术界采用时可能发生术语误用的一个例子。

terminology: n. [总称] 术语

- medical terminology 医学术语
- Every science has its own terminology. 每门科学都有其专门的术语。

- The term *peer-to-peer* refers to a system by which two processes communicate over a network (or internet). It is not a property of the network (or internet). 术语“对等”指的是两个进程通过网络（或者互联网）进行通信的一种系统，并不是网络（或者互联网）的一种属性。internet: 常译作“互联网（络）”，系 internetwork 的简写形式，指的是一组通过网关联结在一起的可能互不相同的计算机网络。注意 internet 与 Internet 的不同，后者常译作“因特网”“国际互联网”，但有人说成“互联网”，造成两者难以区分。



知识扩展



计算机英语翻译

二、词性、句子成分、句子类型转换

语法知识对于正确理解原文无疑有很大的帮助，但同时也会成为翻译中束缚我们手脚的障碍。英汉两种语言存在很大的差异，翻译时如果拘泥于原文单词或句子的语法特征，势必产生拗口的欧化句子，甚至难以理解的句子。因此，在忠实于原文的前提下，要敢于突破语法框框，对词性、句子成分、句子类型等进行变通转换，以使译文自然流畅，符合汉语习惯。

□ 例句1

You should use your e-mail account with the expectation that some of your mail will be read from time to time. 使用电子邮件账号时，你应该想到：你的一些邮件会被人不时地阅读。

本句涉及名词转为动词，即名词 expectation 在译文中变成了动词“想到”。此外，原文的句子成分在译文中也发生了变化：主句的谓语动词 use 及其宾语 your e-mail account 转为时间状语；在主句中作状语的介词短语 with the expectation 转为主句的谓语动词；同位语从句转为宾语从句。这句话如果按照原文的单词词性和句子成分翻译，会非常拗口：你应该带着你的一些邮件会被人不时阅读的料想使用你的电子邮件账号。

□ 例句2

These tweaks will bring out the best in your new PC and give you a solid foundation for future applications and operating system update. 这些微调将使你的新个人电脑的长处充分发挥出来，并为你未来更新应用程序和操作系统打下坚实基础。

本句涉及名词转为动词，同时其句子成分也发生了变化。update 在译文中不转换词性也可以：……并为你未来的应用程序和操作系统更新打下坚实基础。这里的词性转换属于两可。

□ 例句3

Multithreading is a necessity in multimedia and network programming. 多线程操作在多媒体与网络编程中必不可少。

本句涉及名词转为形容词。像例句2一样，不作词性转换也可（多线程操作在多媒体与网络编程中是一件必不可少的事），但转换后的译文似乎更流畅。

□ 例句4

An e-mail is formatted similarly to a memo. 电子邮件的格式编排类似于备忘录。

本句涉及动词转为名词，句子成分也随着发生了变化。词性转换有多种类型，而且词性转换往往伴随有句子成分的转换。实际上，在翻译的过程中，什么词性变成了什么词性无关紧要（而且我们常常是无意识地进行了词性转换），只要这种变通有利于按照汉语的习惯表达就行。

□ 例句5

Court decisions, however, seem to support the notion that because an organization owns and operates an e-mail system, the e-mail messages on that system are also the property of the organization. 然而，法庭判决似乎支持以下看法：因为一个电子邮件系统为一个机构所拥有和运行，所以上面的电子邮件也为该机构所有。

这个句子的同位语从句的结构为“原因状语从句 + 主句”。其中的原因状语从句按原文译成主动句也可，但改译成被动句似乎有两重功效：一是可使该从句的译文更通顺；二是更有利于后面主句的衔接。

□ 例句6

Broadband connections provide the necessary links between LANs that have made what is called the information superhighway a reality. 宽带连接在局域网之间提供必要的链路，从而使所谓的信息高速公路成为现实。

在这句话中，that 引导的定语从句修饰 links。在译文中，我们将其变成了结果状语。我们也可以将这个定语从句译成：而这些链路使所谓的信息高速公路成为现实。这样的话，定语从句就变成了 Broadband connections provide the necessary links between LANs 的并列分句：宽带连接在局域网之间提供必要的链路，而这些链路可使所谓的信息高速公路成为现实。把定语从句按照原文译成 links 的定语不是不可，但读起来不太符合汉语的表达习惯。