

《计算机网络》

图书基本信息

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《计算机网络》

内容概要

《计算机网络》(第4版)是国内外使用最为广泛的计算机网络经典教材。全书按照网络协议模型(物理层、数据链路层、介质访问控制子层、网络层、传输层和应用层),自下而上系统地介绍了计算机网络的基本原理,并给出了大量实例。在讲述各网络层的同时,还融合进了近年来迅速发展起来的各种网络技术,如Internet、SONET、ADSL、CDMA、WLAN和蓝牙等。另外,针对当前计算机网络的发展现状以及计算机安全的重要性,《计算机网络》(第4版)用了一整章的篇幅对计算机安全进行了深入讨论。

《计算机网络》

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精彩短评

- 1、 导师推荐的一本书，对基本概念有很详细的描述；尽管是04年出版的，里面涉及的一些知识点在现在看来也是新鲜事物；印刷的也不错；还有，当当网送货上门的服务也不错！
- 2、 看了最多的原版书。。看起来真累
- 3、 不像是影印版，排版太差，我都买亏了，但还是得看。
- 4、 书很好，印刷质量也不错。特南鲍姆的书给没问题！
- 5、 其实这本书的纸张是最好的一本了，我卖过的。内容就不用说了。
- 6、 原版书，对于理解更有帮助，可能比中文版难读，但要学习网络，看原著还是很推荐的。里面很多内容紧跟时代发展，很有参考价值。
- 7、 内容非常深奥，慢慢看，希望能成为大牛
- 8、 ぜんぜん分からないです。
- 9、 很理论,但语言也很幽默,好像老外的书都这样
- 10、 专业英语,学习好地方.
- 11、 书是英文的，有英文基础的人就看英文好了，英文讲的容易理解，简单。
- 12、 名副其实的蓝宝书！！
- 13、 本书是计算机网络技术的经典著作，内容翔实，实例丰富，讲解生动，值得细细品味
- 14、 大学时候的计算机网络教材，每八年换一版的经典牛书。很喜欢原版的封面，为啥引进后整成这个鸟样了？
- 15、 写作风格挺好，有的地方很幽默；内容太广，不太适合做教材，其实我真的不想知道电话网的协议.....
- 16、 品味经过别人嚼过的东西，是不会有这么大的收获的，所以看国外经典书籍一定要看外文原版。虽然会有点吃力，但是经过吃力的反复咀嚼的东西才会真正的成为自己的积累。可能一本被翻译了的书它只是作者的观点，而且有非常的瑕疵，而且在这个急功近利的时代，翻译书籍的作者也不太为书本的质量去担当太多的责任。
- 17、 关于计算机网络的巨细无遗的一本书。

不过难度还是挺大的，特别是前半部分讲了很多物理层和链路层方面的东西，看起来非常枯燥。

关于具体的TCP/IP，这本书讲的不多，毕竟这本书是阐述一般性的网络结构和原理，而TCP/IP只是其中的一种而已。

书中到处充满有趣的计算机历史和八卦，Tanenbaum老师功底深厚，令人叹服。除了这本《计算机网络》，他还写过《现代操作系统》，数据库、计算机组成、分布式等方面的著名教材，简直是一神人。

- 18、 书拿到了，不错，希望下学期能用到
- 19、 还是蛮不错的一本作为基础性书籍
- 20、 这本书确实是本不错的好书,不过内容是英文的哦,我的英文不太好,看起来很费力,想买此书,英文又不好,最好还是买中文版的吧,,当当就有.
- 21、 太厚了，没读完，就读了3、4章，是挺全的，但是内容各个方面全都有，容易没有耐性读下去
- 22、 书感觉还是挺新的，包装的也算可以。
- 23、 内容不用说了印刷的不错~！物有所值.....
- 24、 我们的教材，买了中文和英文，相当不错，谢希仁的书和这本很相似
- 25、 很好的书，不过接近1000页不是那么容易看完的。但是比起读完后的收获还是值得的。
- 26、 我们老师要求的网络教材，知识讲解全面，而且通过参考代码来讲解协议，容易理解。
- 27、 研究生时候的教材
- 28、 教材
- 29、 大家都说好，反正我也看不懂

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- 30、不错，书好厚啊，得慢慢看了。。。
- 31、中文版看的差不多了，英文版有点难啃。据说这本书的英文版是写网络论文的词典
- 32、好书，对英语提高也有帮助
- 33、哎，太厚了，太贵了……
- 34、Tanenbaum大神
- 35、学习计算机网络的推荐教材，中文版翻译的也非常好
- 36、非常很好，对于计算机专业的非常有帮助
- 37、没读完，不过感觉还可以
- 38、很不错的书，不知道的地方随时查阅
- 39、可以说把网络的基础知识讲得非常好了。
不过对于更多的协议有些讲的不够细，
当然了我们也不能强求一本书把所有的网络协议都讲得非常详细。
也不太现实。
不过有些东西的确到了再更新的时候了。
- 40、首先，送货很及时，质量也不错，很满意。其次，书本身内容没的说，了解网络的应该都知道。
- 41、很轻松的专业书籍，有很多有趣的实例和小故事，如同读小说一般。
- 42、是我看过的网络书中感觉最好的
- 43、内容详细易懂结构清晰
- 44、研读中。。。

精彩书评

1、起初在Verycd上看到的电子版，看了一章后实在是受不了了在当当买了一本清华大学出版社的影印版。自己基础不是很好，后面的习题做的很痛苦，向清华大学索要习题解答的邮件都石沉大海没有音讯。出版社卖出书后就可以不管了吗？

2、如题，这是我看的第一本英文原版书。大学时曾经上过的一门选修课是用这本书的中文版做为教材，但是很可惜，当时没有仔细的去读它，匆匆的就过去了。后来读研的时候，重新捡起来读，不同的是买了一本英文版的，因为也想借此提高一下英语的阅读水平。让我感到意外的是，我竟然读进去了，还觉得非常有意思，跟以前上课的时候是完全不同的两种感觉。我想一是心态不同了（应付考试vs主动学习），二是没有了翻译，直接触及作者的思想。从此以后，我就决定以后凡是有英文的，一定要看英文的。以上都是题外话，还是言归正传，说说这本书本身吧。首先，看它的页数，就是到本书很厚。没错，确实厚，因为它讲的全，从物理层讲到应用层，而且还是有重点的讲，重要的原理和机制讲的也比较细。其次，它的语言很清楚（我指的是英文，中文的差点），就是你一看就明白了，不会有歧义，也不会被绕晕。最后，书里的插图很多，这点很好。因为图是比文字还要直观的表达。我想假如有一本书能够以图的方式来讲解（当然少量的文字说明也是必不可少的），那一定是看起来最省劲的。所以，没看过的，想学习网络的同学们，这真是一本好书，不要错过！

3、书籍说明计算机网络课程使用的教材应该算是不错的一本书，经典教材吧讲的异常详细，对网络的各个领域都有涉及和讲解主要从网络的几个主要层级分别进行介绍，并给出了延伸阅读的建议唯一的问题是，这本书很久没更新过了，很多相关知识和当前流行的应用有些脱节具体评价参考：

http://www.amazon.com/review/R30TE5S184XE45/ref=cm_cr_pr_viewpnt#R30TE5S184XE45 阅读建议学习计算机网络基础的话，这本是不错的选择 不过，最好结合更新的书籍来参考新应用没有涉及，但是基础讲的很好

章节试读

1、《计算机网络》的笔记-第32页

both Connection-oriented and the Connectionless Services can be reliable and unreliable. So it is hard to say there is a link between the connection and the reliability. Whether the service is reliable depends on whether the system requires a acknowledge before next sending.

For example, VoIP is unreliable because of its demand for synchronization, but it is still a connection service.

Register mail is quite reliable(used in the registration of many sites), and it is connectionless.

2、《计算机网络》的笔记-第65页

The technique used in the Ethernet to avoid conflict in transmission is just like a discussion in our daily life:

Three people are sitting around and gossiping about the things happened recently. If someone of them, like Jim want to say a funny story. He will look around first to see if Mary and Peter is speaking. It is rude to interrupt other people's speech. If no one else have topics to say and there is a silence, he will begin his story. And if Mary is holding her microphone, Jim will wait a random time then retry again.

Air is the only Ether in the real life, so there should be one person making his speech each time.

In the case of wireless, the problem arouses. It also has a reflection in our life:

Jim, Mary and Peter are sitting in a row, Mary can hear both Jim and Peter, but Peter and Jim cannot hear each other. So if Jim want to talk to Peter, he isn't sure whether Peter is talking to her, too. So it is likely to collide.

3、《计算机网络》的笔记-第205页

Tanenbaum quoted a line of Macbeth to infer protocol 1 is 'utopia', which is the highlight in this chapter.

What's more, Tanenbaum has quoted animal farm in Modern Operating System:
All processes are equal, but some are more equal

classic!

4、《计算机网络》的笔记-第90页

Bandwidth & Data Rate

《计算机网络》

People always get confused in the difference between the data rate and bandwidth. Some people thought they are two sides of one thing. Actually data rate comes after the bandwidth.

Tanenbaum points out:

The range of frequencies transmitted without being wrongly attenuated is called the bandwidth.

The range is from 0 to one number and the number is the so called bandwidth.

So it exists a question why high frequency signal is easy to be attenuated?

One explanation is the higher frequency means the shorter wave length. It is hard for a short wave to get through the relatively long channel.

But the bandwidth always effects the data rate.

Henry Nyquist derived an equation expressing the maximum data rate for a finite bandwidth [noiseless] channel.

max data rate = $2 H \log_2 V$ bits/sec

Claude Shannon make a further work and extended it to the case of a channel subject to random noise:

max data rate = $H \log_2(1+S/N)$ bits/sec

5、《计算机网络》的笔记-第101页

WHY The amount of information that an electromagnetic wave can carry is related to its bandwidth. Obviously wave A can carry more information than B in a same period of time.

--^---^---^---^--- A:10101010

-----^-----^----- B:0101

$$f = c / \lambda$$

$$df / d\lambda = -c / \lambda^2$$

$$|\Delta f| = c * \Delta \lambda / \lambda^2$$

But a narrow frequency band can always get the best reception.

6、《计算机网络》的笔记-第50页

Using the connectionless subnets or the connect-oriented subnet is the 'To be or not to be question' in networking.

An analog (Tanenbaum uses this word frequently) is that I want to tell my girl friend how much I love her. One way I can just call to say I love you.(name of a famous song) The other way is write several love letters and send them to her. In first situation, the conversation is continuous. My every word will arrive in sequence. But there is always a annoying time before the connection is built.

In second situation, the post office is the key. They are in charge of sending every letter to my girl friends. Suppose

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the letters will arrive in different ways (shipping, air or the post). In result, the word will in random order. Anyway she still gets the meaning as long as there's no letter missing in the transmission.

ATM (the abbreviation of Asynchronous Transfer Mode) is connection-oriented though it uses the packet switching subnet. Because it requires to build a temporary connection, and there is always a virtual circuit in the subnet. When the connection is set up, the data is transmitted in packages.

7、《计算机网络》的笔记-第23页

wireless networks (3 categories)

1. System interconnection

connect the components of a computer using short-range radio (so without wire) such as Bluetooth

it often uses the master-slave paradigm: the computer is the master and the keyboard and mouse are the slaves.

2. Wireless LANs

it enables one computer to communicate with others. (2 types)

- 1) a central radio modem communicating all computers
- 2) one computer communicating with another

a standard for wireless LANs called IEEE 802.11 (all the notebooks around me use this standard. and most of them are using 802.11b or 802.11g)

3. Wireless WANs (3 generations)

- 1) analog for voice only
- 2) digital for voice only
- 3) digital for both voice and data

Bob Metcalfe's 's metaphor of wireless is quite interesting (a portable potty~).

Why he hates wireless?

He is the inventor of the Ethernet.

8、《计算机网络》的笔记-第126页

Modem vs. codec (A good explanation)

<http://cboard.cprogramming.com/brief-history-cprogramming-com/20772-difference-codec-modem.html>

The 'Modem' MODulates and DEModulates a digital signal to stepped (analog) ADPCM (Adaptive Differential Pulse Code Modulation) frequencies. This allows for higher transfer rates on a single DS0 circuit.

This is a hardware conversion.

A "Codec" on the other hand, COmpresses and DECompresses a digital data signal only. No analog involved. It is nothing more than a compression/decompression algorithm tweaked for optimal use with Video or Audio data.

This is a software conversion.

A modem is a piece of hardware. It is an electronic device that communicates over a digital or analog medium (line) to transmit data. This data is coded (digitalized) and then converted to fit the medium it is transmitted through (analog or digital) so the information is received on the other end by another modem and is then interpreted.

A codec is software, it is a program 'key' of sorts that tell the computer how to 'translate' the digital information of a file and present it in an understandable manner. It does not necessarily mean that it is a security measure, but it is the 'dictionary' with which the information is written. Some codecs are contained in chips but that nonetheless is a small 'computer' that contain the instructions so it is still a piece of programming.

So the modem is like your mouth and ears and the codec is the part of the brain that 'understands' what you are hearing.

9、《计算机网络》的笔记-第10页

in these two scenarios, 'wireless' != 'mobile'

1. you buy a macbook air but cannot afford a wireless router. (don't ask me why)
so you have to be 'wired' surf the net though your notebook has the ability to be 'mobile'

2. this time you buy a desktop because you want to save some money (both in the mac and wireless router) but just find your apartment lacking of network cabling. Unfortunately, you have to purchase both a wireless router and a wireless network card to get online. Although you can't walk around with your desktop in hand, but you are still 'wireless'.

10、《计算机网络》的笔记-第17页

Broadcast networks (opposite to the ring) can be divided into static and dynamic:

static:

Divide the time into slices and use a round-robin[1] algorithm. Each machine broadcast in its own time slice. The disadvantage is obvious: if one machine have nothing to speak, the others still have to wait until its time 'belongs' to it is over.

dynamic:

1. centralized: there is arbitration to determine who goes next
2. decentralized: each machine must decide for itself whether to transmit (automatically)

[1] The term round-robin was originally used to describe a document signed by multiple parties in a circle to make

it more difficult to determine the order in which it was signed.
from wikipedia

11、《计算机网络》的笔记-第2页

The distinction between a computer network and a distributed system:

In a distributed system, the independent computers look like a single coherent system. They are organized by a layer of software (called Middleware) on the top of different operating system. So the how the machine works is transparent to users. One example is the WWW, in which everything is a document.

but in a computer network, the coherence is absent. Users are exposed to the machines. If a user want to run a program on a remote machine, he has to log onto the machine first.

12、《计算机网络》的笔记-第36页

Service vs. Protocol

Service is something like the object in programming. It often provides other object (in this case, layer) some method/function to use but not showing how they are implemented.

Protocol is more like a rule. Sometimes we delivery information in text. If we don't make a rule how to define the format. The one who receives it will be confused.

Supposing I leave a message to my girl friend:

message={3,13,124883418,Annie}

It has several meanings if don't send it with a specification like:

first digit=Month

second digit=Day

third digit=Tel number

string=your friend's name

So my girl friend knows there is someone named Annie called in March 13th and her number is blablabla

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