

<<通信网>>

图书基本信息

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## 前言

未来的社会是信息化的社会，计算机科学与技术在其中占据了最重要的地位，这对高素质创新型计算机人才的培养提出了迫切的要求。

计算机科学与技术已经成为一门基础技术学科，理论性和技术性都很强。

与传统的数学、物理和化学等基础学科相比，该学科的教育工作者既要培养学科理论研究和基本系统的开发人才，还要培养应用系统开发人才，甚至是应用人才。

从层次上来讲，则需要培养系统的设计、实现、使用与维护等各个层次的人才。

这就要求我们的计算机教育按照定位的需要，从知识、能力、素质三个方面进行人才培养。

硕士研究生的教育需突出"研究

## 内容概要

《通信网基本概念与主体结构》(英文版)(第2版)除对第1版内容进行了更新外,还广泛引入了网络协议分析仪分析各种协议的操作过程。

《通信网基本概念与主体结构》内容大致分为三部分。

第一部分为综述,由前两章组成。

主要通过广泛应用的网络业务介绍网络的变革与发展;并通过网络提供的服务讨论网络协议的分层模型和不同层之间的交互作用。

第二部分以电话网、局域网、分组交换网这些基础网络为例,介绍网络体系结构的基本概念和低层协议的主要技术。

这部分包含第3章至第7章,其中,第3章介绍数字传输技术的基础知识,内容有不同媒体信息的数字化描述、数字调制、编码、检错、纠错、信道特性及各种传输媒质特性等。

第4章介绍电路交换网络中的几种复用和交换技术,重点是SONET。

第5章讨论对等层协议,主要讨论数据链路层的ARQ差错控制协议,滑动窗机理,以及实用的PPP协议和HDLC协议。

第6章首先详细讨论媒质访问控制技术,包括随机访问、预约访问、信道化访问,然后对以太网、令牌环、FDDI和无线局域网的基本知识和协议作了简要介绍。

第7章讨论分组交换网,介绍了几种常用的路由算法,并对不同类型的流量管理机制作了较为深入的分析。

第三部分讨论TCP/IP和ATM这两种主体网络,并进一步阐明基本的网络概念如何体现在这两种主体网络之中。

此外,对当前某些热点课题也作了必要介绍。

这部分由5章组成,其中,第8章讨论TCP/IP网络的结构和相关协议,包括IP、IPv6、TCP、UDP、内部路由协议和组播路由协议等。

第9章讨论ATM网络,主要介绍ATM层和ATM适配层,并对信令和PNNI路由选择作了基本介绍。

第10章介绍现代网络结构中的基本概念和主要协议,包括综合服务、区分服务、互连模型以及RSVP、MPLS、RTTP、SCP等协议。

第11章介绍网络安全协议和加密算法。

第12章讨论网络中的多媒体技术和相关标准,包括数据压缩、信号编码以及分别用于图像和视频编码的JPEG、MPEG标准。

作者简介

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## 编辑推荐

概括而言,《通信网基本概念与主体结构》(英文版)(第2版)取材广泛,内容新颖,结合实际,既有基本的介绍,又有较为深入的分析,还有大量的习题,可作为计算机、电子等专业本科生、研究生的教学用书,或作为各行业网络技术人员、服务人员的参考读物。

The material in the book has been rearranged so that optional sections can be skipped without a disruption in the topic flow. The sections that contain optional material are indicated by a diamond ( ) in the heading. The optional sections that contain detailed mathematics are now indicated by a sidebar. Chapter 1 has been shortened and the discussion of network evolution has been simplified. The functions associated with each layer are introduced along with the discussion on network evolution. In Chapter 2 the discussion on how all the layers work together has been improved by introducing examples using Ethereal packet captures. The section on application layer protocols has been expanded and a new section provides an introduction to network protocol analyzers. PCM speech coding has been moved from Chapter 12 to Chapter 3. Chapter 4 provides more detail on SONET and optical transport networks. Satellite cellular networks have been dropped. Chapter 5 now consists of two parts. The first part deals with peer-to-peer protocols using reliable data transfer protocols as an example. The first part also includes TCP reliable byte stream service. The second part focuses on data link layer protocols and now includes a section on framing. Chapter 6 has also been divided into the principles of medium access control protocols Part I and LANs ( Part II ). We have simplified the mathematical discussion of medium access controls and provide details in a separate section. In Chapter 7 we have streamlined the discussion of packet networks, and we have separated clearly the more advanced discussion of traffic management.

Chapter 8 makes extensive use of packet capture examples to illustrate the operation of TCP/IP protocols.

Chapter 10 on advanced network architectures has been revised extensively. The discussion of ATM over IP has been replaced by a discussion of the overlay and peer models to network interconnection. The chapter now contains discussion on virtual networks and GMPLS. The material on RTP and SIP has been updated and moved from Chapter 12 to this chapter. Chapter 11 has been updated with brief discussions of the Advanced Encryption Standard and 802.11 security.

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