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<<网络管理>>

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前言

20世纪末，以计算机和通信技术为代表的信息科学和技术，对世界的经济、军事、科技、教育、文化、卫生等方面的发展产生了深刻的影响，由此而兴起的信息产业已经成为世界经济发展的支柱。
进入21世纪，各国为了加快本国的信息产业，加大了资金投入和政策扶持。
为了加快我国信息产业的进程，在我国《国民经济和社会发展第十个五年计划纲要》中，明确提出“以信息化带动工业化，发挥后发优势，实现社会生产力的跨越式发展。
”信息产业的国际竞争将日趋激烈。
在我国加入WTO后，我国信息产业将面临国外竞争对手的严峻挑战。
竞争成败最终将取决于信息科学和技术人才的多少与优劣。
在20世纪末，我国信息产业虽然得到迅猛发展，但与国际先进国家相比，差距还很大。
为了赶上并超过国际先进水平，我国必须加快信息技术人才的培养，特别要培养一大批具有国际竞争能力的高水平的信息技术人才，促进我国信息产业和国家信息化水平的全面提高。
为此，教育部高等教育司根据教育部吕福源副部长的意见，在长期重视推动高等学校信息科学和技术教学的基础上，将实施超前发展战略，采取一些重要举措，加快推动高等学校的信息科学和技术等相关专业的教学工作。
在大力宣传、推荐我国专家编著的面向21世纪和“九五”重点的信息科学和技术课程教材的基础上，在有条件的高等学校的某些信息科学和技术课程中推动使用国外优秀教材的影印版进行英语或双语教学，以缩短我国在计算机教学上与国际先进水平的差距，同时也有助于强化我国大学生的英语水平。
为了达到上述目的，在分析一些出版社已影印相关教材，一些学校已试用影印教材进行教学的基础上，教育部高等教育司组织并委托高等教育出版社开展国外优秀信息科学和技术优秀教材及其教学辅助材料的引进研究与影印出版的试点工作。
为推动用影印版教材进行教学创造条件。
本次引进的系列教材的影印出版工作，是在对我国高校信息科学和技术专业的课程与美国高校的进行对比分析的基础上展开的。

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内容概要

本书作者在网络管理、工程及操作上有着丰富的经验，他将这些宝贵的经验与现实世界中的实例相结合，介绍了网络管理的基本概念及最新技术。
本书不是仅讲述某一特殊专门的网络技术，而是涉及了网络管理的基础，包括背景知识、技术、工具等，这些是所有网络管理者必须了解的。
本书内容包括三个部分：第一部分提供连网及网络技术的背景知识，如集线器、路由器、网桥、转换器等；第二部分重点介绍了网络管理结构和协议，讨论了SNMP管理、宽带管理及TMN；第三部分介绍了一些用于监控网络参数、网络管理应用程序、管理网络及系统等的工具。
　内容：I.背景知识（1. 数据通信与网络管理概述 2. 计算机技术回顾）II.SNMP、宽带与TMN管理（3. 基本概念：标准、建模与语言 4. SNMPv1：组织与信息5. SNMPv1：通信6. SNMPv27. SNMPv38. RMON9. 宽带网络管理：ATM网络10. 宽带网络管理：访问网络11. 电信管理网络）III.管理工具、系统及应用（12. 网络管理工具及系统 13. 网络管理应用程序 14. 基于Web的管理附录 OSI管理） 作者简介:MANI SUBRAMANIAN is a professor at Georgia Institute of Technology,where he teaches a Network Manage-ment course based on his years of industry experience.He has led Research and development at several networking corporations and has practical knowledge of networking and netowrk management.In1989,he has elected Tech-nical Kirector of the OSI Network Management Forum and was responsible for the first release of OSI NM specificatiions.Dr.Subramanian received his Ph.D.from Purdue University.

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作者简介

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章节摘录

插图：transport problem from the client's workstation to the server platform. The former is asystem problem and falls under the category of system management. The latter is a connectivity problem and falls under network management. We can generalize systemmanagement as the management of systems and system resources in the network. Network management is concerned with network resources such as hubs, switches, bridges,touters, and gateways, and the connectivity among them via a network. It alsoaddresses end-to-end connectivity between any two processors （not application processes） in the network. As we saw in Section 1.1, a network consists of network components and their interconnections. The vendor who manufactures a network component or set of network components is best qualified to develop a network management system for that product or setof products. This involves getting the data from each instance of a component in the network to one or more centralized locations and displaying its status on a network management system. For example, failure of a bridge would set up an alarm in the network management system to alert the operations personnel of the failure. This would enable the operations personnel to follow up on the problem and restore the service, even before the user calls in a complaint.As we mentioned, each type of component is managed most efficiently by the respec tive management system, a network management system manages all the components that are connected to a network. Again, it is relatively simple for a vendor to develop a network management system to manage a network of components it produced. However, a user, such as a global corporation, buys components from different vendors and theinformation systems manager of the corporation has the responsibility to maintain the network of all vendor components. This might require installation of multiple network management systems for an enterprise, or a network management system that can manage multiple vendor components. Thus, a common management system, as well as the integration of different management systems and their interoperability, has played a majorrole in the network management arena in the past decade. Professional organizations andindustrial communities have been establishing standards for this purpose, which are stillevolving. The two major standards are the Internet and the OSI standards. We will lookat the former in detail in this book. A network management dumbbell architecture for interoperability is shown in Figure1.23（a） where vendor systems A and B exchange common management messages. Themessages consist of management information data （e.g., the type, id, and status of managed objects） and management controls （e.g., setting and changing the configuration ofan object）The protocols and services associated with the dumbbell architecture are presented in Figure 1.23（b） Application services are the managementrelated applicationssuch as fault and configuration management. The management protocols are CMIP for the OSI model and SNMP for the Intemet model. Transport protocols are the first four layers of the OSI model and TCP/IP over any of the first two layers of the seven-layer OSI model.Figure 1.24 models a hierarchical configuration of two network agents monitoring two sets of managed objects. A network management system （NMS） is at the top of the hierarchy. Each network agent monitors its respective objects. Either in response to a polled query from the NMS or triggered by a local alarm, the agent communicatesthe rel evant data to the NMS.

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