

《3G演进》

图书基本信息

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前言

During the past years , there has been a quickly rising interest in radio access technologies for providing mobile as well as nomadic and fixed services for voice , video , and data. The difference in design , implementation , and use between telecom and data com technologies is also getting more blurred. One example is cellular technologies from the telecom world being used for broadband data and wireless LAN from the data com world being used for voice over IP. Today , the most widespread radio access technology for mobile communication is digital cellular , with the number of users passing 3 billion by 2007 , which is almost half of the worlds population. It has emerged from early deployments of an expensive voice service for a few car-borne users , to todays widespread use of third generation mobile-communication devices that provide a range of mobile services and often include camera , MP3 player , and PDA functions. With this widespread use and increasing interest in 3G , a continuing evolution ahead is foreseen. This book describes the evolution of 3G digital cellular into an advanced broadband mobile access. The focus of this book is on the evolution of the 3G mobile communication as developed in the 3GPP (Third Generation Partnership Project) standardization , looking at the radio access and access network evolution. This book is divided into five parts. Part I gives the background to 3G and its evolution , looking also at the different standards bodies and organizations involved in the process of defining 3G. It is followed by a discussion of the reasons and driving forces behind the 3G evolution. Part II gives a deeper insight into some of the technologies that are included , or are expected to be included as part of the 3G evolution. Because of its generic nature , Part II can be used as a background not only for the evolution steps taken in 3GPP as described in this book , but also for readers that want to understand the technology behind other systems , such as WiMAX and CDMA2000.

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内容概要

《3G演进:HSPA与LTE(英文版.第2版)》是爱立信研究院研发人员的经验之谈，描述了3G数字蜂窝系统如何演进成为先进的宽带移动接入技术，重点介绍了3G移动通信标准化开发演进路线、无线接入技术和接入网络的演进。书中内容分为5部分，清晰地勾勒出了3G演进技术取舍的诸多细节。

《3G演进:HSPA与LTE(英文版.第2版)》是移动通信行业技术人员的必备参考指南，也是高等院校通信专业师生不可多得的教学参考书。

作者简介

Erik Dahlman 博士，世界知名移动通信技术专家，爱立信研究院资深研究员，毕业于瑞典皇家工学院。早期从事WCDMA的3G移动通信技术的研发和标准制定工作，后来成为3GPP项目成员，目前主要负责WCDMA R5的标准化工作以及下一代手机系统的无线接入研究工作。他在无线通信领域拥有20多项专利，由于工作业绩突出，曾荣获IEEE运载工具技术学会授予的Jack Neubauer奖以及爱立信研究院授予的年度发明家奖。

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The size and weight of the mobile terminals have been reduced dramatically during the past 20 years. The standby and talk times have also been extended dramatically and the end users do not need to re-charge their devices every day. Simple black-and-white (or brown-and-gray) numerical screens have evolved into color screens capable of showing digital photos at good quality. Mega- pixel-capable digital cameras have been added making the device more attractive to use. Thus, the mobile device has become a multi-purpose device, not only a mobile phone for voice communications. In parallel to the technical development of the mobile devices, the mobile- communication technologies are developed to meet the demands of the new serv- ices enabled, and also to enable them wireless. The development of the digital signal processors enables more advanced receivers capable of processing mega- bits of data in a short time, and the introduction of the optical fibers enables high-speed network connections to the base stations. In sum, this enables a fast access to information on the Internet as well as a short roundtrip time for normal communications. Thus, new and fancier services are enabled by the technical development of the devices, and new and more efficient mobile-communication systems are enabled by a similar technical development.

2.1.2 Services Delivering services to the end users is the fundamental goal of any mobile- communication system. Knowing them, understanding them, managing them, and charging them properly is the key for success. It is also the most difficult task being faced by the engineers developing the mobile-communication system of the future. It is very difficult to predict what service (s) will be popular in a 5- to 10-year perspective. In fact, the engineers have to design a system that can adapt to any service that might become popular and used in the future. Unfortunately, there are also technical limitations that need to be understood, and also the tech- nical innovations that in the future enable new services.

2.1.2.1 Internet and IP technology The success of the Internet and the IP-based services delivered over the Internet is more and more going wireless. This means that the mobile-communication systems are delivering more and more IP-based services, from the best effort- Internet data to voice-over-IP, for example in the shape of push-to-ta k (PoC) . Furthermore, in the wireless environment it is more natural to use, for exam- ple, location-based services and tracking services than in the fixed environment.

媒体关注与评论

“如果你打算学习HSPA与LTE，本书无疑是最佳参考指南，因为作者不但是通信技术高手，而且知道怎么让你也成为技术高手。”——Joel Schopp, IBM工程师

“这是迄今为止最系统的甚至可以说最优秀的移动通信技术演进资料！我这么评价它毫不夸张，因为它详尽介绍了4G之路该如何走。”——Amazon.com

编辑推荐

飞速发展的移动通信技术如何演进不但给各大运营商、设备厂商带来了挑战，也成为横亘在网络工程人员面前的巨大课题，如何应用新技术以保证自己在竞争中立于不败之地，是通信工程师们必须认真思考的问题。《3G演进：HSPA与LTE(英文版.第2版)》是爱立信研究院工程师们的经验结晶，探讨诸多3GPP标准细节，清晰地勾勒出了如何在各种移动通信演进技术之间进行取舍，准确体现了作者在把握技术演进方向上的前瞻意识。与许多只是阐述标准的同类书不同，《3G演进：HSPA与LTE(英文版.第2版)》内容均来自一线实战，很多资料都是首次公开。全书内容分为五个部分，重在介绍3.5G和4G移动通信标准化开发的路线，关注无线接入技术和接入网络的演进，主要知识点包括：3.5G和4G系统及其发展背景；3.5G和4G涉及的具体技术，如高速数据传输、OFDM传输、多天线技术等；HSPA；LTE和SAE；系统性能评估。《3G演进：HSPA与LTE(英文版.第2版)》将使你更深入地理解3.5G和4G技术，自信应对未来通信技术挑战。

1、看过本书的两个版本了.感觉作为HSPA/LTE的入门教材,很不错.说它不错,是因为该书:- 对空中接口物理层的阐述深入浅出,配合了大量图例,清晰易懂- 对相关的技术背景的介绍,如多天线技术,OFDM等,也通俗易懂,没有纠缠太复杂的数学公式- 在阐述know what的同时,也尽可能的介绍了know why所以我认为该书很值得推荐.:)

2、面对冰冷的协议,规定了各种格式,调制编码方式,各种模式等等,你能做些什么呢?最多不过把它们理清头绪而已,如果是一个团队,可能对某些部分进行仿真实验。但是透过这本书,你能深刻的体会到协议的制定是怎么回事。首先是任务要求,满足怎么样速率之类的;其次是选择关键技术:OFDM、MIMO再次才到协议的一些内容,对于不同的场景,选择不同的调制编码方式,才能在通信的可靠性与有效性之间做出权衡。为什么导频信道后面跟着的是控制信道,而不是数据?因为离导频越近,信道估计越准确,所以对于控制信息这类关键的内容,必须放在这里,数据信息错了不要紧,对于语音、视频流,错了就错了,不影响整体通信效果;对于要求较高的数据,可以采用低比特的调制编码技术来提高可靠性,不行还有前向纠错,再不行还有RLC的重传机制等等.....作者从协议设计师的角度,想你展示了:“协议之所以这样设计,是经过如下的考虑的:.....”通过它,你能才能理解协议,而不是死记硬背协议;通过它,你才能更加透彻的理解通信原理中的很多知识。

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