1. Record Nr. UNINA9910132237103321

Titolo	Broadband access : wireline and wireless--alternatives for Internet services / / Steve Gorshe, PMC-Sierra, Inc. USA, Arvind R. Raghavan, Blue Clover Devices, USA, Thomas Starr, Stefano Galli, ASSIA Inc., USA
Pubbl/distr/stampa	Chichester, West Sussex, United Kingdom : , : Wiley, , 2014 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2014]
ISBN	1-118-87879-5 1-118-87877-9 1-118-87880-9
Edizione	[1st edition]
Descrizione fisica	1 online resource (447 p.)
Altri autori (Persone)	GorsheSteve RaghavanArvind StarrThomas (Thomas J.J.) GalliStefano (Telecommunications engineer)
Disciplina	384.3/3
Soggetti	Broadband communication systems Computer networks - Standards Internet access
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	-- About the Authors xv -- Acknowledgments xvii -- List of Abbreviations and Acronyms xix -- 1 Introduction to Broadband Access Networks and Technologies 1 -- 1.1 Introduction 1 -- 1.2 A Brief History of the Access Network 2 -- 1.3 Digital Subscriber Lines (DSL) 3 -- 1.3.1 DSL Technologies and Their Evolution 3 -- 1.3.2 DSL System Technologies 5 -- 1.4 Hybrid Fiber-Coaxial Cable (HFC) 5 -- 1.5 Power Line Communications (PLC) 6 -- 1.6 Fiber in the Loop (FITL) 7 -- 1.7 Wireless Broadband Access 10 -- 1.8 Direct Point-to-Point Connections 12 -- Appendix 1.A: Voiceband Modems 12 -- 2 Introduction to Fiber Optic Broadband Access Networks and Technologies 15 -- 2.1 Introduction 15 -- 2.2 A Brief History of Fiber in the Loop (FITL) 16 -- 2.3 Introduction to PON Systems 18 -- 2.3.1 PON System Overview 18 -- 2.3.2 PON Protocol Evolution 19 -- 2.4 FITL Technology Considerations 21 -- 2.4.1 Optical Components 21 -- 2.4.2 Powering

the Loop 22 -- 2.4.3 System Power Savings 23 -- 2.4.4 PON Reach Extension 25 -- 2.5 Introduction to PON Network Protection 30 -- 2.5.1 Background on Network Protection 31 -- 2.5.2 PON Facility Protection 31 -- 2.5.3 OLT Function Protection 35 -- 2.5.4 ONU Protection 40 -- 2.5.5 Conclusions Regarding Protection 42 -- 2.6 Conclusions 42 -- Appendix 2.A: Subscriber Power Considerations 43 -- References 43 -- Further Reading 43 -- 3 IEEE Passive Optical Networks 45 -- 3.1 Introduction 45 -- 3.2 IEEE 802.3ah Ethernet-based PON (EPON) 45 -- 3.2.1 EPON Physical Layer 46 -- 3.2.2 Signal Formats 46 -- 3.2.3 MAC Protocol 48 -- 3.2.4 Encryption and Security 49 -- 3.2.5 Forward Error Correction (FEC) 50 -- 3.2.6 ONU Discovery and Activation 51 -- 3.2.7 ONU Ranging Mechanism 52 -- 3.2.8 EPON OAM 52 -- 3.2.9 Dynamic Bandwidth Assignment (DBA) 53 -- 3.3 IEEE 802.3av 10Gbit/s Ethernet-based PON (10G EPON) 54 -- 3.3.1 10G EPON Physical Layer 54 -- 3.3.2 Signal Format 58 -- 3.3.3 MAC Protocol 59 -- 3.3.4 Forward Error Correction 59 -- 3.3.5 ONU Discovery and Activation 61.
3.3.6 ONU Ranging Mechanism 61 -- 3.3.7 10G EPON OAM 61 -- 3.3.8 Dynamic Bandwidth Allocation 61 -- 3.4 Summary Comparison of EPON and 10G EPON 61 -- 3.5 Transport of Timing and Synchronization over EPON and 10G EPON 61 -- 3.6 Overview of the IEEE 1904.1 Service Interoperability in Ethernet Passive Optical Networks (SIEPON) 63 -- 3.6.1 SIEPON MAC Functional Blocks 65 / / 3.6.2 VLAN Support 67 -- 3.6.3 Multicast Service 67 -- 3.6.4 SIEPON Service Management 67 -- 3.6.5 Performance Monitoring and Verification 69 -- 3.6.6 SIEPON Service Availability 70 -- 3.6.7 SIEPON Optical Link Protection 70 -- 3.6.8 SIEPON Power Savings 70 -- 3.6.9 SIEPON Security Mechanisms 71 -- 3.6.10 SIEPON Management 71 -- 3.7 ITU-T G.9801 Ethernet Passive Optical Networks using OMCI 71 -- 3.8 Conclusions 71 -- Appendix 3.A: 64B/66B Line Code 72 -- References 75 -- Further Readings 75 -- 4 ITU-T/FSAN PON Protocols 77 -- 4.1 Introduction 77 -- 4.2 ITU-T G.983 Series B-PON (Broadband PON) 78 -- 4.3 ITU-T G. 984 Series G-PON (Gigabit-capable PON) 79 -- 4.3.1 G-PON Physical Layer 79 -- 4.3.2 G-PON Frame Formats 81 -- 4.3.3 G-PON Encapsulation Method (GEM) 87 -- 4.3.4 G-PON Multiplexing 91 -- 4.3.5 Encryption and Security 92 -- 4.3.6 Forward Error Correction 92 -- 4.3.7 Protection Switching 94 -- 4.3.8 ONU Activation 94 -- 4.3.9 Ranging Mechanism 95 -- 4.3.10 Dynamic Bandwidth Assignment (DBA) 96 -- 4.3.11 OAM Communication 97 -- 4.3.12 Time of Day Distribution 97 -- 4.3.13 G-PON Enhancements 101 -- 4.4 Next Generation PON (NG-PON) 101 -- 4.4.1 Introduction to G.987 series XG-PON (NG-PON1 / 10Gbit-capable PON) 102 -- 4.4.2 XG-PON Physical Layer 102 -- 4.4.3 XG-PON Transmission Convergence Layer and Frame Structures 105 -- 4.4.4 Forward Error Correction 108 -- 4.4.5 XG-PON Encapsulation Method (XGEM) 109 -- 4.4.6 XG-PON Management 110 -- 4.4.7 XG-PON Security 110 -- 4.4.8 NG-PON2 40 Gbit/s Capable PON 110 -- Appendix 4.A: Summary Comparison of EPON and G-PON 112 -- References 113 -- Further Readings 114.
5 Optical Domain PON Technologies 115 -- 5.1 Introduction 115 -- 5.2 WDMA (Wavelength Division Multiple Access) PON 115 -- 5.2.1 Overview 115 -- 5.2.2 Technologies 116 -- 5.2.3 Applications 120 -- 5.3 CDMA PON 120 -- 5.4 Point-to-Point Ethernet 122 -- 5.5 Subcarrier Multiplexing and OFDM 123 -- 5.5.1 Introduction 123 -- 5.5.2 OFDMA PON 123 -- 5.6 Conclusions 125 -- References 126 -- Further Readings 126 -- 6 Hybrid Fiber Access Technologies 127 -- 6.1 Introduction and Background 127 -- 6.2 Evolution of DOCSIS (Data-Over-Cable Service Interface Specification) to Passive Optical Networks 127 -- 6.2.1 Introduction and Background 127 -- 6.2.2

DOCSIS Provisioning of EPON (DPoE) 128 -- 6.2.3 Conclusions for DPoE 135 -- 6.3 Radio and Radio Frequency Signals over Fiber 135 -- 6.3.1 Radio over Fiber (RoF) 136 -- 6.3.2 Baseband Digital Radio Fiber Interfaces 136 -- 6.3.3 Radio Frequency over Glass (RFoG) 138 -- 6.4 IEEE 802.3bn Ethernet Protocol over Coaxial Cable (EPoC) 140 -- 6.5 Conclusions 140 -- References 141 -- Further Readings 141 -- 7 DSL Technology / Broadband via Telephone Lines 143 -- 7.1 Introduction to DSL 143 -- 7.2 DSL Compared to Other Access Technologies 144 -- 7.2.1 Security and Reliability 144 -- 7.2.2 Point-to-Point Versus Shared Access 145 -- 7.2.3 Common Facilities for Voice and DSL 146 -- 7.2.4 Bit-rate Capacity 146 -- 7.2.5 Hybrid Access 146 -- 7.2.6 Future Trends for DSL Access 146 -- 7.3 DSL Overview 147 -- 7.3.1 Voice-band Modems 147 -- 7.3.2 The DSL Concept 147 -- 7.3.3 DSL Terminology 149 -- 7.3.4 Introduction to DSL Types 151 -- 7.3.5 DSL Performance Improvement, Repeaters, and Bonding 152 -- 7.3.6 Splitters and Filters for Voice and Data 153 -- 7.3.7 Other Ways to Convey Voice and Data 155 -- 7.4 Transmission Channel and Impairments 156 -- 7.4.1 Signal Attenuation 158 -- 7.4.2 Bridged Taps 159 -- 7.4.3 Loading Coils 162 -- 7.4.4 Return Loss and Insertion Loss 163 -- 7.4.5 Balance 163 -- 7.4.6 Intersymbol Interference (ISI) 163 -- 7.4.7 Noise 164.
7.4.8 Transmission Channel Models 170 -- 7.5 DSL Transmission Techniques 170 -- 7.5.1 Duplexing 170 -- 7.5.2 Channel Equalization and Related Techniques 171 -- 7.5.3 Coding 172 -- References 174 -- Further Readings 174 -- 8 The Family of DSL Technologies 175 -- 8.1 ADSL 175 -- 8.1.1 G.lite 176 -- 8.1.2 ADSL2 and ADSL2plus 177 -- 8.1.3 ADSL1 and ADSL2plus Performance 178 -- 8.2 VDSL 179 -- 8.2.1 VDSL2 181 -- 8.2.2 VDSL2 Performance 182 -- 8.3 Basic Rate Interface ISDN 184 -- 8.4 HDSL, HDSL2, and HDLS4 185 -- 8.5 SHDSL 185 -- 8.6 G.fast (FTTC DSL) 187 -- Reference 188 -- 9 Advanced DSL Techniques and Home Networking 189 -- 9.1 Repeaters and Bonding 189 -- 9.2 Dynamic Spectrum Management (DSM) 190 -- 9.3 Vectored Transmission 190 -- 9.4 Home Networking 195 -- References 195 -- Further Readings 195 -- 10 DSL Standards 197 -- 10.1 Spectrum Management / ANSI T1.417 197 -- 10.2 G.hs / ITU-T Rec. G.994.1 199 -- 10.3 PLOAM / ITU-T Rec. G.997.1 200 -- 10.4 G.bond / ITU-T Recs. G.998.1, G.998.2, and G.998.3 201 -- 10.5 G.test / ITU-T Rec. G.996.1 202 -- 10.6 G.lt / ITU-T Rec. G.996.2 202 -- 10.7 Broadband Forum DSL Testing Specifications 203 -- 10.8 Broadband Forum TR-069 / Remote Management of CPE 204 -- References 205 -- 11 The DOCSIS (Data-Over-Cable Service Interface Specification) Protocol 207 -- 11.1 General Introduction 207 -- 11.2 Introduction to MSO Networks 207 -- 11.3 Background on Hybrid Fiber Coax (HFC) Networks 208 -- 11.4 Introduction to DOCSIS 210 -- 11.5 DOCSIS Network Elements 210 -- 11.5.1 CMTS (Cable Modem Terminating System) 211 -- 11.5.2 CM (Cable Modem) 212 -- 11.5.3 FN (Fiber Node) 213 -- 11.5.4 RF Combiner Shelf 213 -- 11.6 Brief History of the DOCSIS Protocol Evolution 213 -- 11.6.1 DOCSIS 1.0 214 -- 11.6.2 DOCSIS 1.1 214 -- 11.6.3 DOCSIS 2.0 214 -- 11.6.4 DOCSIS 3.0 215 -- 11.6.5 Regional History and Considerations 215 -- 11.7 DOCSIS Physical Layer 216 -- 11.7.1 DOCSIS Downstream Transmission 216 -- 11.7.2 DOCSIS Upstream Transmission 218 -- 11.8 Synchronization and Ranging 222.
11.8.1 Synchronization 223 -- 11.8.2 Ranging 224 -- 11.9 DOCSIS MAC Sub-Layer 226 -- 11.9.1 Downstream MAC 227 -- 11.9.2 Upstream MAC 228 -- 11.9.3 MAC Management Messages 232 -- 11.9.4 MAC Parameters 233 -- 11.10 CM Provisioning 239 -- 11.11 Security 240 -- 11.12 Introduction to Companion Protocols 242 -- 11.12.1 The PacketCableTM Protocol 242 -- 11.12.2 The OpenCableTM

Protocol 242 -- 11.12.3 PacketCable Multimedia (PCMM) 242 -- 11.13 Conclusions 243 -- References 243 -- Further Readings 243 -- 12 Broadband in Gas Line (BIG) 245 -- 12.1 Introduction to BIG 245 -- 12.2 Proposed Technology 245 -- 12.3 Potential Drawbacks for BIG 245 -- 12.4 Broadband Sewage Line 247 -- Reference 247 -- 13 Power Line Communications 249 -- 13.1 Introduction 249 -- 13.2 The Early Years 250 -- 13.3 Narrowband PLC 251 -- 13.3.1 Overview of NB-PLC Standards 252 -- 13.4 Broadband PLC 253 -- 13.4.1 Overview of BB-PLC Standards 254 -- 13.5 Power Grid Topologies 257 -- 13.5.1 Outdoor Topologies: HV, MV, and LV 257 -- 13.5.2 Indoor Topologies 258 -- 13.6 Outdoor and In-Home Channel Characterization 261 -- 13.6.1 Characteristics of the HV Power Line Channel 262 -- 13.6.2 Characteristics of MV Power Line Channel 262 -- 13.6.3 Characteristics of LV Power Line Channel 263 -- 13.6.4 Power Line Noise Characteristics 263 -- 13.7 Power Line Channel Modeling 269 -- 13.7.1 Recent Results on the Modeling of Wireline Channels: Towards a Unified Framework 271 -- 13.8 The IEEE 1901 Broadband over Power Line Standard 273 -- 13.8.1 Overview of Technical Features 273 -- 13.8.2 The MAC and the Two PLCPs 274 -- 13.8.3 Access-Specific Features 275 -- 13.9 PLC and the Smart Grid 277 -- 13.9.1 PLC for MV 279 -- 13.9.2 PLC for LV 279 -- 13.10 Conclusions 283 -- References 284 -- Further Reading 285 -- 14 Wireless Broadband Access: Air Interface Fundamentals 287 -- 14.1 Introduction 287 -- 14.2 Duplexing Techniques 287 -- 14.2.1 Frequency-Division Duplex 288 -- 14.2.2 Time-Division Duplex 288 -- 14.3 Physical Layer Concepts 289.
14.3.1 The Wireless Channel 289 -- 14.3.2 Diversity 290 -- 14.3.3 Channel Coding 291 -- 14.3.4 Interleaving 291 -- 14.3.5 Multi-Antenna Techniques and Multiple-Input Multiple-Output (MIMO) 291 -- 14.4 Access Technology Concepts 295 -- 14.4.1 Frequency Division Multiple Access (FDMA) 295 -- 14.4.2 Time Division Multiple Access (TDMA) 295 -- 14.4.3 Code Division Multiple Access (CDMA) 295 -- 14.4.4 Orthogonal Frequency Division Multiplexing (OFDM) 297 -- 14.4.5 MAC Protocols 299 -- 14.5 Cross-Layer Algorithms 300 -- 14.5.1 Link Adaptation 300 -- 14.5.2 Channel-Dependent Scheduling 300 -- 14.5.3 Automatic Repeat Request (ARQ) and Hybrid ARQ (HARQ) 302 -- 14.6 Example Application: Satellite Broadband Access 303 -- 14.7 Summary 303 -- Further Reading 304 -- 15 WiFi: IEEE 802.11 Wireless LAN 305 -- 15.1 Introduction 305 -- 15.2 Technology Basics 306 -- 15.2.1 System Overview 306 -- 15.2.2 MAC Layer 308 -- 15.2.3 Physical Layer 311 -- 15.3 Technology Evolution 312 -- 15.3.1 802.11 b 312 -- 15.3.2 802.11 a/g 313 -- 15.3.3 802.11 n 314 -- 15.3.4 802.11 ac 316 -- 15.4 WLAN Network Architecture 318 -- 15.5 TV White Space and 802.11 af 320 -- 15.6 Summary 320 -- Further Readings 321 -- 16 UMTS: W-CDMA and HSPA 323 -- 16.1 Introduction 323 -- 16.2 Technology Basics 324 -- 16.2.1 Network Architecture 324 -- 16.2.2 Protocol Architecture 325 -- 16.2.3 Physical Layer (L1) 327 -- 16.2.4 Layer-2 334 -- 16.2.5 Radio Resource Control (RRC) 336 -- 16.3 UMTS Technology Evolution 338 -- 16.3.1 Release 99 338 -- 16.3.2 Release 5: High-Speed Downlink Packet Access (HSDPA) 339 -- 16.3.3 Release 6: Enhanced Uplink 343 -- 16.3.4 Release 7 347 -- 16.3.5 Release 8 and Beyond 348 -- 16.4 CDMA2000 350 -- 16.5 Summary 351 -- Further Readings 352 -- 17 Fourth Generation Systems: LTE and LTE-Advanced 353 -- 17.1 Introduction 353 -- 17.1.1 LTE Standardization 353 -- 17.1.2 LTE Requirements 354 -- 17.2 Release 8: The Basics of LTE 355 -- 17.2.1 Network Architecture 355 -- 17.2.2 PDN Connectivity, Bearers, and QoS Architecture 358.

17.2.3 Protocol Architecture 360 -- 17.2.4 Layer-1: The Physical Layer 361 -- 17.2.5 Layer-2 and Cross-Layer Algorithms 370 -- 17.2.6 Layer-3: Radio Resource Control (RRC) 380 -- 17.3 Release 9: eMBMS and SON 383 -- 17.3.1 Evolved Multimedia Broadcast Multicast Service (eMBMS) 384 -- 17.3.2 Self-Organizing Networks (SON) 386 -- 17.4 Release 10: LTE-Advanced 386 -- 17.4.1 Carrier Aggregation 388 -- 17.4.2 Heterogeneous Networks with Small Cells 391 -- 17.5 Future of LTE-Advanced: Release 11 and Beyond 395 -- 17.5.1 Cooperative Multi-Point (CoMP) 396 -- 17.5.2 Release 12 and the Future of LTE 398 -- 17.6 IEEE 802.16 and WiMAX Systems 399 -- 17.7 Summary 400 -- Further Readings 402 -- 18 Conclusions Regarding Broadband Access Networks and Technologies 403 -- Index 407.

Sommario/riassunto

Written by experts in the field, this book provides an overview of all forms of broadband subscriber access networks and technology, including fiber optics, DSL for phone lines, DOCSIS for coax, power line carrier, and wireless. Each technology is described in depth, with a discussion of key concepts, historical development, and industry standards. The book contains comprehensive coverage of all broadband access technologies, with a section each devoted to fiber-based technologies, non-fiber wired technologies, and wireless technologies. The four co-authors' breadth of knowledge is featured in the chapters comparing the relative strengths, weaknesses, and prognosis for the competing technologies. Key Features: . Covers the physical and medium access layers (OSI Layer 1 and 2), with emphasis on access transmission technology.. Compares and contrasts all recent and emerging wired and wireless standards for broadband access in a single reference.. Illustrates the technology that is currently being deployed by network providers, and also the technology that has recently been or will soon be standardized for deployment in the coming years, including vectoring, wavelength division multiple access, CDMA, OFDMA, and MIMO.. Contains detailed discussion on the following standards: 10G-EPON, G-PON, XG-PON, VDSL2, DOCSIS 3.0, DOCSIS Protocol over EPON, power line carrier, IEEE 802.11 WLAN/WiFi, UMTS/HSPA, LTE, and LTE-Advanced. Broadband Access will be of interest to broadband service providers, access network equipment vendors, regulators, telecommunications consultants, technical sales and marketing, field application engineers, and product validation and testing organizations. University students and researchers in topics related to broadband access will also find the book useful as a quick reference to a wide range of technologies.

2. Record Nr. UNISA996568945103316

Titolo	Nature Cell Biology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Periodico

3. Record Nr. UNINA9910957770203321

Titolo	Crisis and renewal in twentieth century banking : exploring history and archives of banking at times of political and social stress / / edited by Edwin Green, John Lampe, and Franjo Stiblar
Pubbl/distr/stampa	London : , : Routledge, , 2016
ISBN	1-351-94747-8 1-138-25853-9 1-315-25891-9
Descrizione fisica	1 online resource (302 pages) : illustrations
Collana	Studies in banking history
Altri autori (Persone)	GreenEdwin LampeJohn R StiblarFranjo
Disciplina	332.10940904
Soggetti	Banks and banking - Europe - History Financial institutions - Europe - History
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	First published 2004 by Ashgate Publishing. Proceedings of the 12th annual conference of the European Association for Banking History held in Ljubljana, Slovenia in May 2001.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	pt. I. War and revolution : Russian and foreign banks, 1917-30 -- pt. II. Depression and political turmoil in Central Europe -- pt. III. Banking in civil war and its aftermath -- pt. IV. Post-war reconstruction : the German and Far Eastern experience -- pt. V. Crisis and renewal in twentieth century banking : the Slovenian experience -- Part VI.

Rupture and reconnections.

Sommario/riassunto

Crisis and Renewal in Twentieth Century Banking explores the behaviour of banks at times of war, revolution, civil war, social turmoil, and reconstruction. Analysing the history and archives of banks, it discovers examples of how banking is affected by political and social upheavals; how banks may influence the outcome of such events; how banking has recovered from periods of intense political and social stress; and how the archives of banks provide remarkable testimony to events in the wider world. By examining the setting of different banking markets in the last century, up to and including the transformation of Eastern and South Eastern Europe in the 1990s, this book marks a new direction for international discussion and research. Contributors include senior historians and archivists from Europe and the United States. Contributions include papers on Russia and foreign banks, 1917-30; depression and crisis in Central Europe in the 1930s; Civil War in Spain; post-war reconstruction in banking in Germany and the Far East; and crisis and renewal in South East Europe. The papers published in this collection were first presented at the twelfth Annual Conference of the European Association for Banking History, held in Ljubljana, Slovenia, in May 2001, and hosted by the Bank of Slovenia and the Nova Ljubljanska Banka.