

1. Record Nr.	UNINA9910814693103321
Autore	Cox Christopher (Christopher Ian), <1965->
Titolo	An introduction to LTE : LTE, LTE-advanced, SAE, and 4G mobile communications // Christopher Cox
Pubbl/distr/stampa	Hoboken, N.J., : John Wiley & Sons, 2012
ISBN	1-119-94353-1 1-280-58981-7 9786613619648 1-119-94282-9 1-119-94281-0
Edizione	[1st ed.]
Descrizione fisica	1 online resource (354 p.)
Disciplina	621.3845/6
Soggetti	Long-Term Evolution (Telecommunications) Mobile communication systems - Standards
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	An Introduction to LTE; Contents; Preface; Acknowledgements; List of Abbreviations; Chapter 1 Introduction; 1.1 Architectural Review of UMTS and GSM; 1.1.1 High Level Architecture; 1.1.2 Architecture of the Radio Access Network; 1.1.3 Architecture of the Core Network; 1.1.4 Communication Protocols; 1.2 History of Mobile Telecommunication Systems; 1.2.1 From 1G to 3G; 1.2.2 Third Generation Systems; 1.3 The Need for LTE; 1.3.1 The Growth of Mobile Data; 1.3.2 Capacity of a Mobile Telecommunication System; 1.3.3 Increasing the System Capacity; 1.3.4 Additional Motivations; 1.4 From UMTS to LTE 1.4.1 High Level Architecture of LTE1.4.2 Long Term Evolution; 1.4.3 System Architecture Evolution; 1.5 From LTE to LTE-Advanced; 1.5.1 The ITU Requirements for 4G; 1.5.2 Requirements of LTE-Advanced; 1.5.3 4G Communication Systems; 1.5.4 The Meaning of 4G; 1.6 The 3GPP Specifications for LTE; References; Chapter 2 System Architecture Evolution; 2.1 Architecture of LTE; 2.1.1 High Level Architecture; 2.1.2 User Equipment; 2.1.3 Evolved UMTS Terrestrial Radio Access Network; 2.1.4 Evolved Packet Core; 2.1.5 Roaming Architecture; 2.1.6 Network Areas

2.1.7 Numbering, Addressing and Identification  
2.2 Communication Protocols; 2.2.1 Protocol Model; 2.2.2 Air Interface Transport Protocols; 2.2.3 Fixed Network Transport Protocols; 2.2.4 User Plane Protocols; 2.2.5 Signalling Protocols; 2.3 Example Information Flows; 2.3.1 Access Stratum Signalling; 2.3.2 Non Access Stratum Signalling; 2.3.3 Data Transport; 2.4 Bearer Management; 2.4.1 The EPS Bearer; 2.4.2 Tunnelling Using GTP; 2.4.3 Tunnelling Using GRE and PMIP; 2.4.4 Signalling Radio Bearers; 2.5 State Diagrams; 2.5.1 EPS Mobility Management; 2.5.2 EPS Connection Management  
2.5.3 Radio Resource Control  
2.6 Spectrum Allocation; References;  
Chapter 3 Digital Wireless Communications; 3.1 Radio Transmission and Reception; 3.1.1 Signal Transmission; 3.1.2 Signal Reception; 3.1.3 Channel Estimation; 3.1.4 Multiple Access Techniques; 3.1.5 FDD and TDD Modes; 3.2 Multipath, Fading and Inter-Symbol Interference; 3.2.1 Multipath and Fading; 3.2.2 Inter-Symbol Interference; 3.3 Error Management; 3.3.1 Forward Error Correction; 3.3.2 Automatic Repeat Request; 3.3.3 Hybrid ARQ; References; Chapter 4 Orthogonal Frequency Division Multiple Access  
4.1 Orthogonal Frequency Division Multiplexing  
4.1.1 Reduction of Inter-Symbol Interference using OFDM; 4.1.2 The OFDM Transmitter; 4.1.3 Initial Block Diagram; 4.2 OFDMA in a Mobile Cellular Network; 4.2.1 Multiple Access; 4.2.2 Fractional Frequency Re-Use; 4.2.3 Channel Estimation; 4.2.4 Cyclic Prefix Insertion; 4.2.5 Use of the Frequency Domain; 4.2.6 Choice of Sub-Carrier Spacing; 4.3 Single Carrier Frequency Division Multiple Access; 4.3.1 Power Variations from OFDMA; 4.3.2 Block Diagram of SC-FDMA; References; Chapter 5 Multiple Antenna Techniques; 5.1 Diversity Processing  
5.1.1 Receive Diversity

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## Sommario/riassunto

An Introduction to LTE explains the technology used by 3GPP Long Term Evolution. The book covers the whole of LTE, both the techniques used for radio communication between the base station and the mobile phone, and the techniques used for signalling communication and data transport in the evolved packet core. It avoids unnecessary detail, focussing instead on conveying a sound understanding of the entire system. The book is aimed at mobile telecommunication professionals, who want to understand what LTE is and how it works. It is invaluable for engineers who are working on LTE, notabl

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