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Nota di contenuto	Cover; Title Page; Copyright Page; Table of Contents; Chapter 1. Network Coding: From Theory to Practice; 1.1. Introduction; 1.2. Theoretical approach; 1.2.1. Max-flow min-cut; 1.2.2. Admissible code; 1.2.3. Linear code; 1.2.4. Algebraic resolution; 1.2.5. Random code; 1.3. Practical approach; 1.3.1. Topologies; 1.3.1.1. Multihop wireless networks; 1.3.1.2. Cellular networks; 1.3.2. Applications; 1.3.2.1. Network coding and TCP; 1.3.2.2. Network coding and P2P; 1.3.2.3. Network coding with priority; 1.4. Conclusion; 1.5. Bibliography; Chapter 2. Fountain Codes and Network Coding for WSNs 2.1. Introduction2.2. Fountain codes; 2.2.1. Generalities; 2.2.2. Families of fountain codes; 2.2.2.1. Random fountain codes; 2.2.2.2. Luby Transform (LT); 2.2.2.3. Raptor code; 2.2.2.4. Code complexity; 2.3. Fountain codes in WSNs; 2.3.1. Implementation; 2.3.2. Protocol of reliability enhancement: ARQs versus fountain codes; 2.3.3. Discharge and overflow; 2.4. Fountain codes and network code for sensor networks; 2.4.1. Impact of network coding on the degree distribution of an LT flow; 2.4.1.1. XOR network coding and LT code; 2.4.2. Design

a network code for LT code

2.4.2.1. Solutions of network coding; 2.4.3. Application to multihop sensor networks; 2.4.3.1. Multihop linear networks; 2.4.3.2. Sensor networks; 2.5. Conclusion; 2.6. Bibliography; Chapter 3. Switched Code for Ad Hoc Networks: Optimizing the Diffusion by Using Network Coding; 3.1. Abstract; 3.2. Introduction; 3.3. Diffusion in ad hoc networks; 3.4. Diffusion and network coding; 3.5. Switched code: incorporate erasure codes with network coding; 3.5.1. Definitions; 3.5.2. Coding function of switched code; 3.6. Decoding function of switched code; 3.7. Design and analysis of a new distribution; 3.7.1. Analysis of switched distribution; 3.8. Conclusion; 3.9. Bibliography; Chapter 4. Security by Network Coding; 4.1. Introduction; 4.2. Attack models; 4.2.1. A type-II wiretap network; 4.2.2. A nice but curious attacker; 4.3. Security for a wiretap network; 4.4. Algebraic security criteria; 4.4.1. Note on random linear network coding; 4.4.2. Algebraic security; 4.4.3. The algebraic security criterion; 4.4.4. Algorithmic application of the criterion; 4.5. Conclusion; 4.6. Bibliography; Chapter 5. Security for Network Coding; 5.1. Introduction; 5.2. Attack models; 5.2.1. Eavesdroppers; 5.2.1.1. Internal eavesdroppers; 5.2.1.2. External eavesdroppers; 5.2.2. Active attackers; 5.2.2.1. Pollution attacks; 5.2.2.2. Flooding attack; 5.2.3. Definition of homomorphic ciphering schemes; 5.2.3.1. Two specific schemes; 5.2.3.2. Completely homomorphic encryption schemes; 5.2.4. Homomorphic encryption and confidentiality in network coding; 5.2.4.1. The case of network coding using XOR; 5.2.4.2. The case of network coding in general; 5.3. Confidentiality; 5.3.1. Alternatives for confidentiality; 5.4. Integrity and authenticity solutions; 5.4.1. Definitions of homomorphic MAC and homomorphic hash functions

Sommario/riassunto

Network coding, a relatively new area of research, has evolved from the theoretical level to become a tool used to optimize the performance of communication networks - wired, cellular, ad hoc, etc. The idea consists of mixing "packets" of data together when routing them from source to destination. Since network coding increases the network performance, it becomes a tool to enhance the existing protocols and algorithms in a network or for applications such as peer-to-peer and TCP. This book delivers an understanding of network coding and provides a set of studies showing the improvement

2. Record Nr.	UNINA9910715713603321
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Pubbl/distr/stampa	[Washington, D.C.] : , : [publisher not identified], , 1854
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Collana	Senate executive document / 33rd Congress, 1st session. Senate ; ; no. 64 [United States congressional serial set] ; ; [serial no. 700]
Soggetti	Manufactures - Defects Defense contracts Dry docks Independent regulatory commissions Government contractors Construction, Military Construction industry - Military aspects Military engineering Navy-yards and naval stations Naval research Railroads Shipyards Legislative materials.
Lingua di pubblicazione	Inglese
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Note generali	Batch processed record: Metadata reviewed, not verified. Some fields updated by batch processes. FDLP item number not assigned.