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Node-to-Node Approaching in Wireless Mesh Connectivity

 Springer

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Preface

The IEEE 802.11s have newly become a scorching subject for researchers for the deployment of wireless networks. It is representing the connectivity of mesh networking in IEEE 802.11 amendment in static and ad hoc networks. However, it is Wireless Mesh Networks (WMNs) which often consists of mesh clients (laptop and cell phones), mesh routers, and gateways. WMNs have many attractive features such as highly reliable connectivity, easy deployment, self-healing, self-configuring, and flexible network expansion. Throughout the book, we have proposed two resolutions of routing and security with respect end-to-end delay, packet delivery ratio, and routing overhead in WMNs. For routing issue, we have proposed two routing mechanism, Novel Cluster-Based Node-to-Node Approaching (NCBN-TO-NA) mechanism, which considers grouping between different clusters as Cluster Head (CH) and uses path discovery with the help of unicast method for very less congestion and packet loss, and Decentralized Hybrid Wireless Mesh Protocol (DHWMP). This protocol considers route announcement scheme of Mesh Portal Point (MPP) in WMNs.

For the evaluation of the proposed mechanism, we have used OPNET and NS-2 simulator and created a real-time test bed environment of WMNs in a Linux-based server. The book is intended for engineers, undergraduate, postgraduates, doctorate, and scientific degree applicants who carry out research, evaluation, and designing of hardware and software for secure communication in WMNs. The information contained in this book represents the results of the extensive work of the author with Prof. Sang-Gon Lee, Whye-Kit Tan, and Jun Huy Lam at the Dongseo University Busan, and Prof. Dhananjay Singh at Hankuk University of Foreign Studies, South Korea.

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About the Book/Conference

This book highlights the routing protocols for Wireless Mesh Networks (WMNs; IEEE 802.11s). It provides an overview of the wireless networks (history, MANET, family of IEEE 802.11, WMNS, etc.) and routing protocols, such as AODV, DSR, OLSR, etc., and also highlights the two resolutions of routing protocols with respect to end-to-end delay, packet delivery ratio, and routing overhead in WMNs. Wireless Mesh Networks have become a hot topic for researcher into the deployment of wireless networks, and they represent the connectivity of mesh networking in IEEE 802.11 amendment in static and ad hoc networks. Moreover, WMNs have numerous attractive features, such as highly reliable connectivity, easy deployment, self-healing, self-configuring, and flexible network expansion. The book describes two routing mechanisms: Novel Cluster-Based Routing Protocols (NCBRP) and Decentralized Hybrid Wireless Mesh Protocol (DHWMP).

Contents

1	Wireless Networks: An Overview	1
1.1	Networks Mechanism	1
1.1.1	Wired Networks	1
1.1.2	Wireless Networks: An Overview	2
1.2	History of IEEE 802.11	7
1.2.1	Family of IEEE 802.11	7
1.3	Differences Between Wireless Ad Hoc Networks and Wireless Mesh Networks	9
	References	10
2	Wireless Mesh Networks Architecture	11
2.1	IEEE 802.11s Architecture	11
2.2	Infrastructure of Wireless Mesh Networks	11
2.2.1	Client Wireless Mesh Networks	12
2.2.2	Hybrid Wireless Mesh Networks	12
	References	14
3	Routing Protocol for WMNs	15
3.1	Introduction	15
3.2	Ad Hoc On-Demand Distance Vector Routing (AODV)	15
3.3	Dynamic Source Routing (DSR)	16
3.4	Optimized Link State Routing (OLSR)	17
3.5	Extensible Mesh Routing Framework	18
3.6	Hybrid Wireless Mesh Protocol (HWMP)	19
	References	19
4	Novel Cluster Based Node to Node Approaching (NCBN-to-NA in WMNs Process) in Wireless Mesh Connectivity	21
4.1	Introduction of Novel Cluster Based Node to Node Approaching (NCBN-to-NA) in Wireless Mesh Connectivity	21

4.2	NCBN-to-NA in WMNs Process	21
4.2.1	Path Establishments	21
4.3	Performance Analysis of NCBN-to-NA	23
4.3.1	Number of Path Discovered	26
4.3.2	Packet Delivery Ratio	26
4.4	Discussion	28
4.5	Summary	28
	References	28
5	Decentralized Hybrid Wireless Mesh Protocol (DHWMP)	
	Mechanism	31
5.1	Introduction	31
5.2	Default Routing Protocol HWMP	31
5.3	Decentralized Hybrid Wireless Mesh Protocol (DHWMP).	32
5.3.1	Path Request (PREQ) Mechanism.	33
5.3.2	Path Reply (PREP)	34
5.4	Performance Analysis of DHWMP Mechanism	40
5.4.1	Channel Capacity	41
5.4.2	Packet Delivery Ratio	43
5.4.3	End-to-End Delay	44
5.4.4	Routing Overhead	44
5.5	Discussion	44
5.6	Summary	45
	References	45
6	Wireless Mesh Networks: Real-Time Test-Bed	47
6.1	Test-Bed Setup	47
6.2	Requirements Specifications	47
6.2.1	Hardware for Mesh Portal & Mesh Access Points	47
6.2.2	Software Mesh Portal, Mesh Access Points & Mobile Station	47
6.3	Operating System	48
6.4	Internetworking	48
6.5	MPs Communication (Broadcast).	48
6.6	Routing Process	50
6.6.1	Path Formation	50
6.6.2	Metric Formula	51
6.7	Networks Setup	51
6.7.1	Real Position of Stations	54
6.7.2	Real-Time Test-Bed Results	54

- 6.8 Performance Analysis 57
 - 6.8.1 TCP Throughput Analysis 57
 - 6.8.2 UDP Throughput Analysis (Throughput Analysis for Different Data Packets) 58
- 6.9 Summary 60
- References 61
- Future of Wireless Mesh Networks 63**

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Abbreviations

AODV	Ad hoc On-Demand Distance Vector Routing Protocol
BGP	Border Gateway Protocol
CBR	Constant Bit Rate
CSMA/CA	Carrier Sense Multiple Access/Collision Avoidance
CTS/RTS	Clear to Send/Request to Send
HWMP	Hybrid Wireless Mesh Protocol
IEEE 802.11s	WLANs with Mesh Network
MAC	Medium Access Control
MADWiFi	Multiband Atheros Driver for Wi-Fi (MADWI F I)
MANET	Mobile Ad hoc Network
MAPs	Mesh Access Points
MPPs	Mesh Portal Points
MWNs	Multi-hop Wireless Networks
NCBN-to-NA	Novel Cluster-Based Node-to-Node Approach Protocol
OLSR	Optimized Link State Routing
RERR	Route Error Message
RIP	Routing Information Protocol
RREP	Route Reply
RREQ	Route Request
STAs	Mobile Stations
TCP	Transmission Control Protocol
UDP	User Datagram Protocol
VAP	Virtual Access Point
WANs	Wireless Ad hoc Networks
WDS	Wireless Distribution System
WLANs	Wireless Local Area Networks
WMNs	Wireless Mesh Networks

List of Figures

Fig. 1.1	Wired networks	2
Fig. 1.2	Wireless networks	2
Fig. 1.3	Branches of wireless networking	3
Fig. 1.4	Point to point wireless networks	4
Fig. 1.5	Point to multipoint wireless networks	4
Fig. 1.6	Multipoint wireless networks	5
Fig. 1.7	Classifications of MWNs	6
Fig. 1.8	Mobile ad-hoc networks	7
Fig. 1.9	IEEE 802.11 networks	8
Fig. 1.10	IEEE802.11s wireless mesh networks	9
Fig. 2.1	Basic infrastructure WMNs	12
Fig. 2.2	Hybrid WMNs	13
Fig. 3.1	AODV route discovery	16
Fig. 3.2	Hybrid wireless mesh protocol (HWMP)	19
Fig. 4.1	Wireless mesh networks divided into cluster groups	22
Fig. 4.2	Path discovery process in NCBN-to-NA	23
Fig. 4.3	Path reply (PREP) process in NCBN-to-NA	24
Fig. 4.4	OPNET modeler for cluster-based routing environment	25
Fig. 4.5	Single radio wireless mesh network channel capacity	26
Fig. 4.6	Average numbers of paths discovered by each protocol	27
Fig. 4.7	Packet delivery ratio as a function of number of nodes	27
Fig. 5.1	PREQ element fields send by source node to MPP	33
Fig. 5.2	PREQ element fields send by neighbors node	34
Fig. 5.3	PREP with neighbor’s information for MPP	35
Fig. 5.4	PREP by MPP to source node with path information	35
Fig. 5.5	Root announcement elements	36
Fig. 5.6	Wireless mesh networks topology	37
Fig. 5.7	DHWMP path setup process	38
Fig. 5.8	Comparison of each node capacity into the WMN	41
Fig. 5.9	Compression of the MPP capacity into the WMN	41
Fig. 5.10	Packet delivery ratio as a function of number of nodes	42

Fig. 5.11 End to end delay as a function of number of nodes 42

Fig. 5.12 Routing overhead as a function of number of nodes. 43

Fig. 6.1 Internetworking structure 48

Fig. 6.2 Loop problem during broadcast 49

Fig. 6.3 Path communications in networks. 50

Fig. 6.4 Path metric between nodes 52

Fig. 6.5 Best path selections 52

Fig. 6.6 Test bed wireless mesh networks infrastructure 53

Fig. 6.7 Real position of the stations 54

Fig. 6.8 TCP throughput result of bandwidth on different window size. 58

Fig. 6.9 Data transfer on different window size 59

Fig. 6.10 Average throughput of different data grams of UDP. 60

Fig. 6.11 Average jitter of each data grams of UDP 60

List of Tables

Table 1.1	Showing differences b/w WANs and WMNs.....	10
Table 4.1	Parameters for NCBN-to-NA simulations.....	25
Table 5.1	Parameters metrics for DHWMP.....	40
Table 6.1	Computer information (ID, IP address, MAC address).....	53
Table 6.2	Parameters for TCP experiment.....	57
Table 6.3	Throughput results of TCP transmission.....	58
Table 6.4	Parameters for UDP transmission.....	59
Table 6.5	Throughput results of UDP transmission.....	59