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# Drone-Assisted Mesh Networks: A Framework for Emergency Connectivity in Remote and Low-Infrastructure Zones

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**Abstract**: *Secure communication in cases of emergencies is paramount for prompt disaster response and public safety. Yet, network infrastructure in most rural and remote areas is either defective or nonexistent, causing interference with effective communication. Mesh networking, in which devices communicate directly without the need for centralized infrastructure, offers an effective solution to such a predicament. This work examines the opportunities and challenges of deploying mesh networking technology for emergency communication in low-connectivity environments, including rural and disaster areas. Based on a review of the existing technologies, case studies of previous disasters, and an examination of socio-technical considerations, the research emphasizes the possibilities for improving resilience in communication systems through mesh networks. The paper also addresses adoption barriers including technical constraints, power limits, awareness among users, and policy loopholes, with suggestions for future research and practical implementations..*

**Keywords**: Mesh Networking, Emergency Communication, Low-Connectivity Areas, Disaster Resilience, Offline-First Mobile Applications, Rural Communication Systems



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