World Academy of Science, Engineering and Technology
International Journal of Computer and Systems Engineering
Vol:20, No:03, 2026

Exploring the Role of IPv6 in Enhancing IoT Communication and Green Network Optimization for Business Sustainability

Authors : Saqib Warsi

Abstract : The Internet of Things (IoT) has become an essential component of modern communication networks, with IPv6 playing a pivotal role in addressing the challenges posed by the rapidly growing number of connected devices. IPv6 provides an expanded address space, offering a solution to the limitations of IPv4 while enhancing routing efficiency and security. This paper explores the impact of IPv6 in improving IoT communication, focusing on its operational benefits for businesses. Additionally, we examine the integration of green communication principles, which aim to reduce energy consumption and operational costs, thus promoting environmental sustainability and business efficiency. Through qualitative analysis and simulation-based modeling, this paper investigates the benefits of IPv6 in IoT environments and evaluates the role of green communication strategies in optimizing network performance. Traffic measurement tools and network performance simulators were employed to analyze the efficiency, sustainability, and scalability of IPv6 networks. By presenting a comprehensive framework for traffic analysis, modeling, and optimization, this research highlights the potential of combining IPv6 and green communication practices to drive business growth while promoting environmental sustainability. The findings provide valuable insights for businesses adopting more sustainable and efficient communication networks.

Keywords : IPv6, Internet of Things (IoT), green communications, traffic measurement and modeling, network virtualization
Conference Title : ICCNDC 2026 : International Conference on Computer Networks and Data Communication
Conference Location : Miami, United States
Conference Dates : March 11-12, 2026