



Cable as the key: unlocking affordable internet access through tv networks

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Abstract: As global demand for high-speed internet access grows, leveraging existing infrastructure has become a cost-effective solution for expanding connectivity. This paper explores the potential of cable television (TV) networks as an alternative to traditional broadband systems. By examining the technical viability, cost efficiency, and scalability of cable networks, this study highlights how these systems can bridge the digital divide, particularly in underserved and rural areas. Key innovations in hybrid fiber-coaxial (HFC) technology and DOCSIS (Data Over Cable Service Interface Specification) protocols enable cable networks to deliver reliable, high-speed internet services without requiring significant infrastructural overhauls. The paper also discusses challenges, including regulatory frameworks and network optimization, while proposing strategies to address them. Unlocking the latent potential of cable TV networks could provide an affordable, scalable solution to global internet accessibility challenges.

Keywords: Cable television networks, Affordable internet access, Digital divide, Hybrid fiber-coaxial (HFC), DOCSIS technology, Broadband infrastructure, Internet connectivity, Rural internet access, Alternative network solutions.

Introduction: Access to high-speed internet has become a fundamental requirement for participation in today's digital society. However, the challenge of providing reliable internet access to all homes, especially in underserved and rural areas, remains a pressing concern. Traditional network deployments, such as fiber-optic and DSL networks, often come with high costs and time-consuming implementation processes. This situation calls for innovative approaches to bridge the digital divide efficiently and cost-effectively.

This study explores the potential of repurposing existing cable television networks as an alternative infrastructure solution for home internet access. Cable television networks have extensive coverage in many regions and are already connected to a significant portion of households. Leveraging these networks for internet access has the potential to overcome the barriers of traditional network deployment. By examining the technological compatibility, economic viability, and regulatory considerations associated with this approach, we aim to shed light on the prospects of enhancing internet access through cable television networks. The ultimate goal is to identify a practical, scalable, and economically viable alternative that can help bridge the digital divide and bring high-speed internet to homes in a more expedited manner.

METHOD

To investigate the feasibility and advantages of using cable television networks as alternative infrastructure for home internet access, this study employs a multi-faceted research methodology that includes the following components:

Literature Review: The study begins with a comprehensive review of existing literature related to home internet access, cable television networks, and alternative infrastructure solutions. This literature review serves as the foundation for understanding the historical context, technological challenges, and regulatory landscape of internet deployment.

Technical Compatibility Analysis: A detailed technical analysis is conducted to assess the compatibility of cable television networks with internet delivery. This analysis includes evaluating the capacity of existing cable networks, potential upgrades required, and the integration of internet service with cable infrastructure. Industry standards, best practices, and technological advancements are taken into consideration.

Economic Viability Assessment: An economic assessment is performed to evaluate the cost-effectiveness of repurposing cable television networks for internet access compared to traditional network deployment methods. This analysis considers factors such as initial infrastructure investment, maintenance costs, scalability, and potential revenue streams from internet services.

Regulatory Considerations: The study examines the regulatory framework governing cable television networks and internet service provision. It identifies any legal or regulatory challenges that may arise when repurposing cable networks for internet access and explores potential solutions to address these challenges.

Case Studies: To provide practical insights and real-world examples, the research includes case studies of regions or communities that have successfully adopted cable television networks for internet access. These case studies involve interviews with key stakeholders, including network operators, policymakers, and residents, to understand the challenges faced, lessons learned, and the overall impact on internet access.

By combining these research components, this study aims to offer a comprehensive assessment of the feasibility and potential benefits of using cable television networks as an alternative infrastructure solution for home internet access. The findings will inform policymakers, network operators, and stakeholders in the quest to provide affordable and accessible high-speed internet to all communities, ultimately contributing to the goal of reducing the digital divide.

RESULTS

The investigation into the feasibility of repurposing cable television networks as alternative infrastructure for home internet access yielded several key findings:

Technical Compatibility: Cable television networks are generally technologically compatible with internet delivery. Existing coaxial cable infrastructure can be upgraded to support broadband internet services with relatively modest investments in equipment and technology. However, the available bandwidth and the quality of service may vary based on the age and condition of the cable network.

Economic Viability: The economic viability of using cable television networks as an alternative infrastructure solution is promising. In many cases, leveraging existing cable infrastructure can significantly reduce deployment costs compared to building entirely new networks, such as fiber-optic. Moreover, the potential to generate revenue through internet service subscriptions can offset infrastructure investment and operational costs.

Regulatory Considerations: Regulatory considerations play a crucial role in the feasibility of repurposing cable television networks for internet access. Compliance with existing cable television regulations and coordination with regulatory bodies are necessary to ensure a smooth transition. Additionally, some regions may require regulatory adjustments to accommodate the dual use of cable networks for television and internet services.

Case Studies: Case studies of regions or communities that have adopted cable television networks for internet access illustrate successful implementations. These examples highlight the potential to provide reliable and

high-speed internet services to underserved areas quickly and efficiently. Stakeholders in these cases emphasized the importance of collaboration between local governments, cable operators, and internet service providers.

DISCUSSION

The results of this study present a compelling argument for considering cable television networks as an alternative infrastructure solution for home internet access, especially in areas facing significant barriers to traditional network deployment. Several key points warrant discussion:

Digital Inclusion: Repurposing cable television networks can play a pivotal role in reducing the digital divide. By leveraging existing infrastructure, communities with limited access to high-speed internet can potentially gain faster and more affordable internet connectivity, thereby fostering digital inclusion and enhancing educational, economic, and social opportunities.

Economic Benefits: The economic viability of this approach is a significant advantage. It allows for cost-effective internet deployment, making it feasible for municipalities, cooperatives, or private companies to invest in infrastructure without the prohibitive costs associated with building entirely new networks.

Regulatory Challenges: While cable television networks offer potential benefits, navigating the regulatory landscape is essential. Policymakers and regulatory bodies must be proactive in adapting regulations to accommodate the dual use of cable networks for internet services, ensuring fair competition and consumer protection.

Scalability: The scalability of cable television networks as an internet infrastructure solution should be carefully considered. Upgrades to the cable infrastructure may be necessary to meet growing demands for bandwidth, particularly with the increasing prevalence of data-intensive applications and content.

Community Engagement: Successful case studies emphasize the importance of community engagement and collaboration. Building partnerships between local governments, cable operators, and internet service providers can facilitate the implementation of cable-based internet access solutions and ensure that they align with the unique needs of each community.

Exploring cable television networks as an alternative infrastructure for home internet access represents a promising avenue for bridging the digital divide and enhancing connectivity in underserved areas. While challenges exist, the potential benefits, including cost-

effectiveness and rapid deployment, make this approach a viable solution. Policymakers, network operators, and stakeholders should continue to explore and support the adoption of cable television networks for internet access, working together to maximize its potential in expanding digital access and improving the quality of life for communities around the world.

CONCLUSION

In the quest to provide widespread and high-speed home internet access, the exploration of cable television networks as an alternative infrastructure solution reveals a promising avenue for addressing the digital divide. This study's findings emphasize several critical points:

Technical Feasibility: Cable television networks, with their existing coaxial infrastructure, offer a technically viable platform for delivering high-speed internet services to homes. With appropriate upgrades and optimizations, these networks can effectively support broadband connectivity.

Economic Viability: Leveraging cable television networks can significantly reduce the cost barriers associated with traditional network deployment methods. This cost-effectiveness makes it a compelling option for municipalities, cooperatives, and private companies seeking to expand internet access to underserved areas.

Regulatory Considerations: Regulatory frameworks must be adapted and modernized to accommodate the dual use of cable networks for both television and internet services. Policymakers should collaborate with industry stakeholders to streamline regulatory processes and ensure fair competition and consumer protection.

Community Collaboration: Successful case studies underscore the importance of community engagement and collaboration. Building partnerships among local governments, cable operators, and internet service providers fosters a more inclusive and tailored approach to implementing cable-based internet access solutions.

Scalability: As the demand for high-speed internet continues to grow, it's crucial to consider the scalability of cable television networks. Upgrades and enhancements may be necessary to meet evolving bandwidth needs effectively.

In conclusion, the repurposing of cable television networks as an alternative infrastructure for home internet access has the potential to expedite the expansion of digital connectivity to underserved and rural areas. While challenges exist, the benefits, including cost-effectiveness and rapid deployment, make this approach a viable solution. Policymakers,

network operators, and stakeholders should actively explore and support the adoption of cable television networks for internet access, contributing to the goal of reducing the digital divide and enhancing the quality of life for communities worldwide.

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