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(57) Abstract :

The invention discloses a steganography-based secure messaging protocol for low-bandwidth channels, comprising (1) a steganographic encoder, (2) a lightweight encryption module, (3) an adaptive compression unit, and (4) a verification mechanism. The protocol embeds encrypted messages within carrier files, ensuring undetectability and efficiency. Experimental results show 92% embedding efficiency with minimal latency, making it ideal for constrained networks.

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