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(57) Abstract :

The present invention relates to a cloud-enabled distributed edge device authentication system comprising a cloud authentication manager (101), edge gateways (102), and edge devices (103). The system employs a lightweight cryptographic engine (104), peer-to-peer authentication module (105), adaptive trust scoring module (106), and credential rotation engine (107) to ensure secure, scalable, and efficient identity validation. By combining centralized cloud intelligence with localized gateway validation, the invention reduces authentication latency, enhances resilience against spoofing attacks, and provides scalable trust management across heterogeneous edge networks.

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