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Synergizing cloud computing and blockchain architectures: Applications and implications

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Ahmed, Sheraz Maki Mohd [a] ; Hashim, Aisha Hassan Abdalla [a] ; Attar, Zainab Senan [b] ;
Khalifa, Othman Omran [a]

[a] International Islamic University Malaysia, Malaysia

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Abstract

Blockchain is a decentralized and distributed digital ledger that records transactions across multiple computers. It consists of a continuously growing list of blocks, where each block contains a set of transactions and a reference to the previous block. The blockchain ensures the immutability and integrity of the recorded transactions by using cryptographic hashes and consensus mechanisms. Cloud computing is a service available over the network. Users can access and store data and applications remotely rather than on local servers or personal computers. Cloud computing offers resource pooling by letting users share the same physical resources dynamically according to their demands, often through virtualization. Cloud computing offers flexible, scalable resources, it can address blockchain's limitations in scalability and transaction speeds by act as a backup for blockchain data, enabling faster recovery and reduced latency. Synergy between cloud computing

and blockchain offers significant potential for innovation across numerous sectors © 2026 by IGI Global Scientific Publishing. All rights reserved.

Indexed keywords

Engineering controlled terms

Cloud computing; Distributed ledger; Personal computers

Engineering uncontrolled terms

Block-chain; Cloud-computing; CryptoGraphics; Decentralised; Fast recovery; Local servers; Multiple computers; Physical resources; Resource pooling; Virtualizations

Engineering main heading

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Corresponding authors

Corresponding author	S.M.M. Ahmed

Affiliation	International Islamic University Malaysia, Malaysia

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Corresponding authors

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