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(57) Abstract :

The most recent iteration of the Industrial Internet of Things (IIoT) confers additional capabilities upon the traditional production model in preparation for Industry 4.0 through the use of cloud computing. Cloud integration expands the capabilities of manufacturing systems by providing cloud-based control and real-time process monitoring. This type of expansion is known as Cloud Manufacturing (CM). The incorporation of cloud computing, on the other hand, presents a new set of security concerns to the entire manufacturing ecosystem as well as increases in end-to-end latency. By moving security services closer to the network's edge, you can minimise message routing latency towards the cloud, remove the system's single most likely point of failure, and improve the overall performance of the system as a whole. We present a security service architecture that is supported by blockchain technology and fog computing, and it works on fog nodes that are located at the edge of manufacturing equipment clusters. The proposed service makes it easier for CM equipment to be authenticated and protects the privacy of the connection between equipment and the cloud, all while maintaining anonymity and unlinkability throughout the blockchain. We used Hyperledger Fabric to create the proposed design, and then compared the performance benefit it offered to that of the most recent and cutting-edge alternatives.

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